AMERICAN
Cinematographer

International Journal of Motion Picture Photography and Production Techniques

The Photography of

'FAIL SAFE'

Combining Techniques for Visual Effects

•

DIMENSION 150

•

Shooting Under Cover With Available Light

•

STUDENT PRODUCED CIVIL WAR EPIC

•

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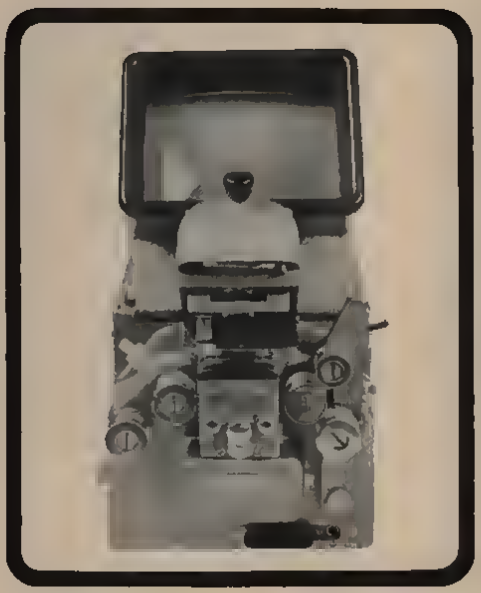
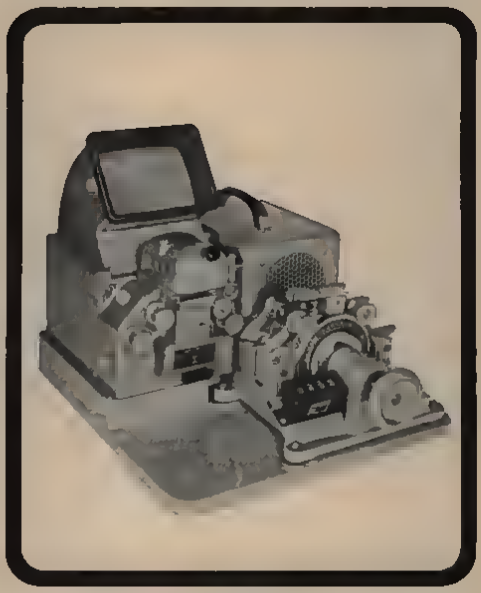


SOS Magniola 16mm Double System Editor



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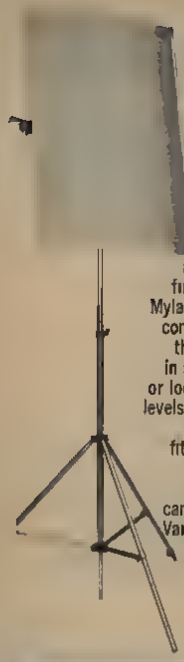

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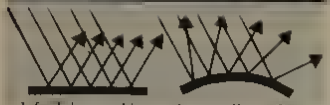

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AMERICAN

Cinematographer

INTERNATIONAL JOURNAL OF MOTION PICTURE PHOTOGRAPHY AND PRODUCTION TECHNIQUES

AUGUST, 1963 Vol 44, No 8

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ON THE COVER

STUDENT PRODUCTION crew of Unusual Films, cinema unit of Bob Jones University, Greenville, S C, film a dolly shot for scene in "Red Runs The River." A ninety foot long dolly track composed of 2X4's and plywood panels was laid for a making a dramatic shot of General Rwelf running to the aid of a fallen comrade-in-arms

ARTHUR E. GAVIN, Editor

MARION HUTCHINS, Editorial Assistant

OFFICES—Editorial and Business: 1782 No. Orange Drive, Hollywood 28, Calif. Telephone HOllywood 7-2135. EASTERN ADVRTISING REPRESENTATIVE: Paul Gilbert, 489 Fifth Avenue, New York 17, N.Y. Telephone AX 7-5614

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INDUSTRY NEWS

News briefs of industry activities, products and progress

THINGS ARE HAPPENING IN HOLLYWOOD

The Hollywood film industry is as virile as ever, and almost every day sees some new indicator of increasing activity and a brighter future At same time, new problems are being faced, and solved.

Late last month, there was a move to integrate tape with film production, provided the unions could be induced to go along with the idea For years Hollywood producers of TV film shows and commercials have had a yen to produce panel shows, soap operas quiz and participation shows but have shied away because of the costs of putting such shows on film Taping would be the answer, provided the film technicians' unions would allow videotape technicians to work on same stages with film workers This, the film technicians refused to do, even though IATSE Prexy Richard Walsh appeared to be receptive to the idea

The biggest and perhaps the most significant move in TV annals was the deal set last month by NBC and film producers MCA that would see latter producing a full season of feature films, each two hours long, for initial weekly release on television via NBC TV and subsequently exhibited as features in theatres abroad Step means that MCA's Universal City becomes the largest U.S. producer of feature films and NBC-TV the largest exhibitor

Reported trade-paper *Variety* "The weekly features, as the deal provides will be no mere elongated TV shows (of the B-pix quality imposed by standard TV network budgets) but true A quality features produced in accordance with the finest and most expensive showmanship standards and financed by major feature budgets"

COLORTRAN engineers explain operation of Color-Tran's new focusing Quartz-King lamp to Bill Widmayer (center) head of Camera Dept., Columbia Studios following demonstrations of new lamp at recent meeting of ASC in Hollywood

Cinerama, last month, unveiled its new single-lens projection system It not only eliminates the separation lines in the projected picture but eliminates for exhibitors the cost and maintenance of three projectors, as is required for the original Cinerama system.

It appeared from the demonstrations, however that further technical improvement is necessary. Obviously the new lens system cannot accommodate certain speed photography, and background action appeared overly blurred. Improvements are aimed to attain satisfactory results in time for the world premiere of Stanley Kramer's "Mad, Mad Mad, Mad World" set for the new Cinerama theatre now under construction on Sunset Boulevard in Hollywood

•

KARL FREUND, ASC, ATTENDS CIE SESSION IN VIENNA

Karl Freund, ASC, president of Photo Research Corp., Hollywood, and a member of the U.S. National Committee of the International Commission on Illumination (CIE) attended the 15th session of the Commission in Vienna last month Freund, who holds numerous patents on light measurement instruments is the U.S. delegate for "Lighting of the Stage, Photography, Cinema and Television Production"

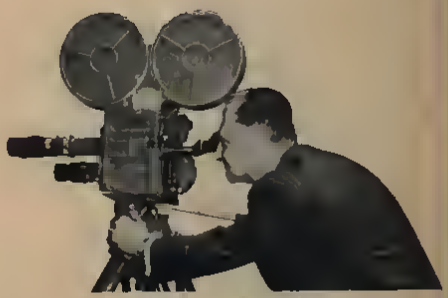
KARL FREUND

Composed of illumination experts from the world's 38 major countries, the CIE meets every four years to recommend technical standards covering every aspect of illumination from aviation ground lights to home, school, street lighting, etc Freund's attendance marks the third time in 12 years that he has been selected to represent the U.S.

The Department of the Navy has commended Freund for his contributions in the field of aircraft lighting over the past years, and particularly for improvements in the lighting of aircraft cockpit areas and instruments.

Continued on Page 492

"On my U. N. beat I push SUPERIOR® 2 to 250 and even 400— and my picture quality holds!"



"We're shooting fast-moving international figures at the United Nations on short notice, in all sorts of light," says Irving Heitzner, Hearst Metrotone News. "I can boost the rating, tell the lab and get first-class footage. Perfect clarity. No noticeable grain. And we shoot single system, get sound on SUPERIDR 2 negative that sounds like positive."

Mr. Heitzner's work won a Special Award this year in the "Sound-on-Film" category during the annual Journalism Week sponsored at the University of Missouri by the National Press Photographers' Association and the World Book Encyclopedia. For your own work Du Pont films—and technical data on them—are available from the Du Pont Photo Products sales offices shown here.

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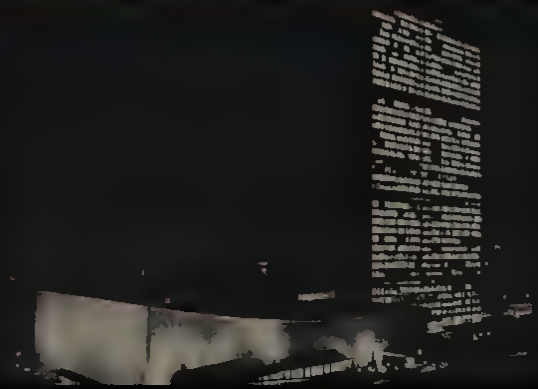

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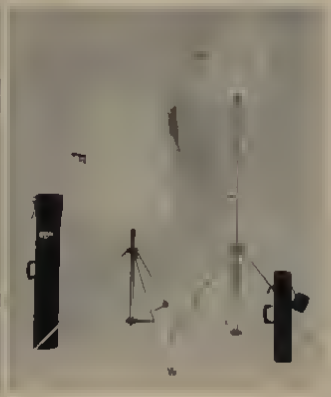
WHAT'S NEW

IN EQUIPMENT, ACCESSORIES, SERVICES



PORTABLE SUN REFLECTOR

The new Lowel-Light Vari-flector is a portable lightweight sun reflector. It mounts on a special stand, has positive "pan", "tilt" and height adjustments. It rolls up in seconds and fits in a fibre tube (with stand) for transporting and storage. A unique feature is the "flooding" mechanism that provides continuously adjustable brightness and "spread" control, similar to a spot light. The bright, extremely even, reflected light pattern can be spread out over an area three times larger and the intensity reduced three times by means of an adjustable cam lever. Vari-flector also doubles as a shadowless indoor "fill", highly suited to fashion, portrait and commercial photography, when "soft" light is essential. The aluminized Mylar reflecting surface is bonded to resilient aluminum slats. It is rigid in the wind, washable and scratch resistant. Vari-flectors are available in two sizes. Prices range from $24.50 to $149.50. Lowel-Light Photo Engineering, 429 West 54th St., New York, N.Y.

IMPROVED COLORTRAN LIGHT

High intensity light sources that incorporate the best features of quartz iodine lamps and PAR-64 sealed beam construction are now available for high-speed photographic applications, from ColorTran Industries, 630 So. Flower St., Burbank, Calif.

Manufactured by Sylvania, the lamps can be used in ColorTran's CineQueen housing (pictured), and produce some of the highest intensities of any comparable light source now available. Intensities as high as 714,000 centerbeam candlepower have been achieved. Incorporating the advantages of quartz-iodine light source and sealed-beam construction, the new Sylvania lamps are non-darkening, provide even illumination, and are capable of withstanding severe impact and vibration.

The lamps are available in either 650 or 1000 watts, with 4 different lens styles: Very Narrow Spot, Narrow Spot, Medium Flood, and Wide Flood. 650 Watt lamps list at $27.95, 1000-watt at $31.75.

Since the CineQueen housing was originally designed for PAR-64 type lamps, it provides a perfect housing for the new Sylvania lamps which can also be used in ColorTran's LEX-64 Explosion Proof Housing. For those who do not own a CineQueen housing but wish to take advantage of the great intensities available, ColorTran has provided two basic kits, called Speed Queen Kits. Each Kit consists of a Model LCQ CineQueen housing, choice of new Sylvania lamp, Model SSBL Bentleg stand, and either a Model CMD1-10 MiniDyne 1000 Electronic Dimmer or a Model CMD1-6 MiniDyne 650 Electronic Dimmer. The Speed Queen 650 Kit, packaged in a fitted case, lists at $191.50 complete. The 1000-Kit, packaged in a fitted case, is $220.45 complete.

35MM PRECISION SYNCHRONIZER

Precision Laboratories, 928 East 51st Street, Brooklyn, N.Y., announces a new 35mm film synchronizer in its

Continued on Page 442

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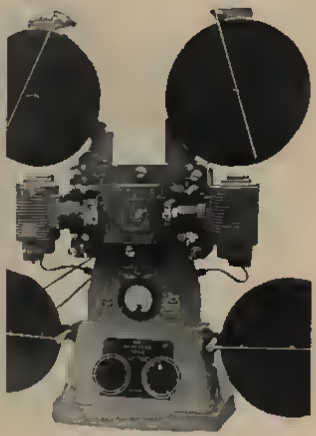

OPTICAL REDUCTION-ENLARGING PRINTER

Reduces 35mm to 16mm; enlarges 16mm to 35mm—color or B&W. 1200-ft capacity. Speed 1400 to 3500 ft per hour

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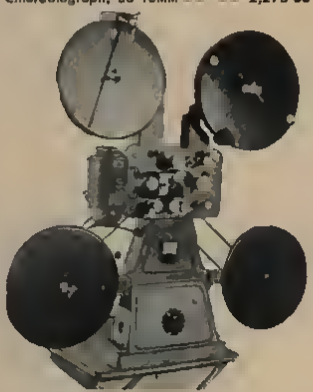
Comb. 35mm continuous	1,945 00
Cinerediograph, 35/16mm	2,275 00



16MM-35MM MICRO PRINTER

Continuous contact printer for unperforated film. 1200-ft capacity; prints 1600 ft per hour 115 volts, 60 cys A.C.

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Improved model. Makes sharp, brilliant copies of color or B&W cine films. A.C. operated, no batteries required. Two rheostats afford range of 10 printer light densities

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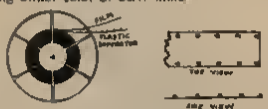
DEVELOPING TANKS AND REELS

Stainless steel tanks and reels for processing either color or B&W films



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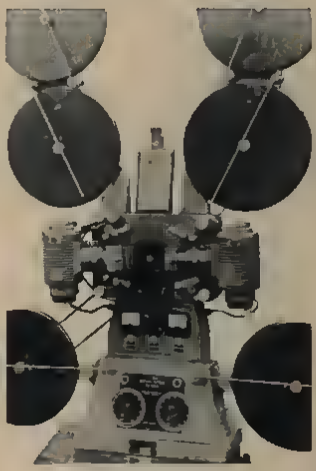
16mm tank	$16.55
8mm tank	11 95
16mm reel	18 45
8mm reel	12 95
16mm separator strip	15 00
8mm separator strip	7 95



COMBINATION 8MM AND 16MM CONTACT PRINTER

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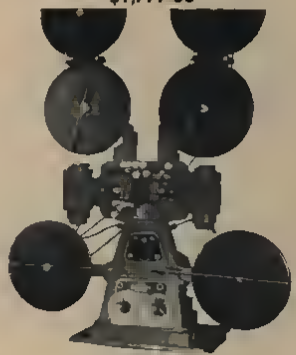

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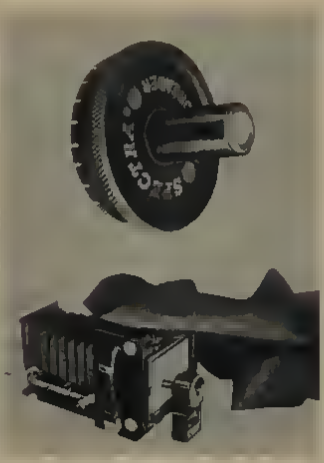
WHAT'S NEW

Continued from Page 440

line of "Unitized" equipment. The new model S635 2AO incorporates an optical sound reading head and footage counter. Also available for this unit are amplifiers and speakers. List price is $224.50.



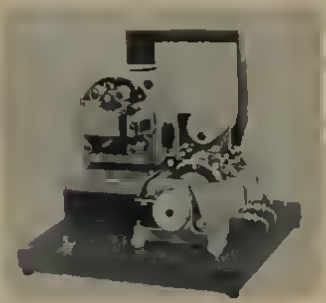
PHOTOREADER ACCESSORY

Photo Research Corp., 837 No. Cahuenga Blvd., Hollywood 38, Calif., announces a ground-glass photoreader accessory for use with the Spectra Combi 500 exposure meter. Device enables user to read correct exposures directly from the camera ground glass, as pictured, and eliminates the arithmetical calculations usually necessary for such exposures.

Using the Combi-500's battery driven CdS cell, the G-G Photoreader collimates the light of the camera ground glass image with a predetermined reference mark on the meter's calculator dial, directly indicates the correct exposure. List price is $14.95. Optional pointer-lock, factory installed, $13.50.

UNDERWATER LIGHT

Birns & Sawyer Cine Equipment, 6424 Santa Monica Blvd., Hollywood 38, Calif., last month introduced its new SeAQUArtz light unit for underwater photography. Under tests, it has delivered 5,000 watts of illumination. Light has cast aluminum housing with convection cooling fins, 65,000 candlepower quartz-iodide lamp unit, plus a special Pyrex lens ½-inch thick that will withstand pressure of underwater depths of 300 feet. Lights are available for 115 and 220 volt AC, and 30 volt DC battery power. List price is $275.00.



FILM EDITOR-TIMER

The S.O.S. TV Newsfilm Projectola Editing Timing outfit syncs picture with sound, projects sizeable picture on built-in screen. Both optical and magnetic sound tracks are accommodated. List price is $679. S.O.S. Photo-Cine-Optics, 602 W. 52nd St., New York.

Continued on Page 456

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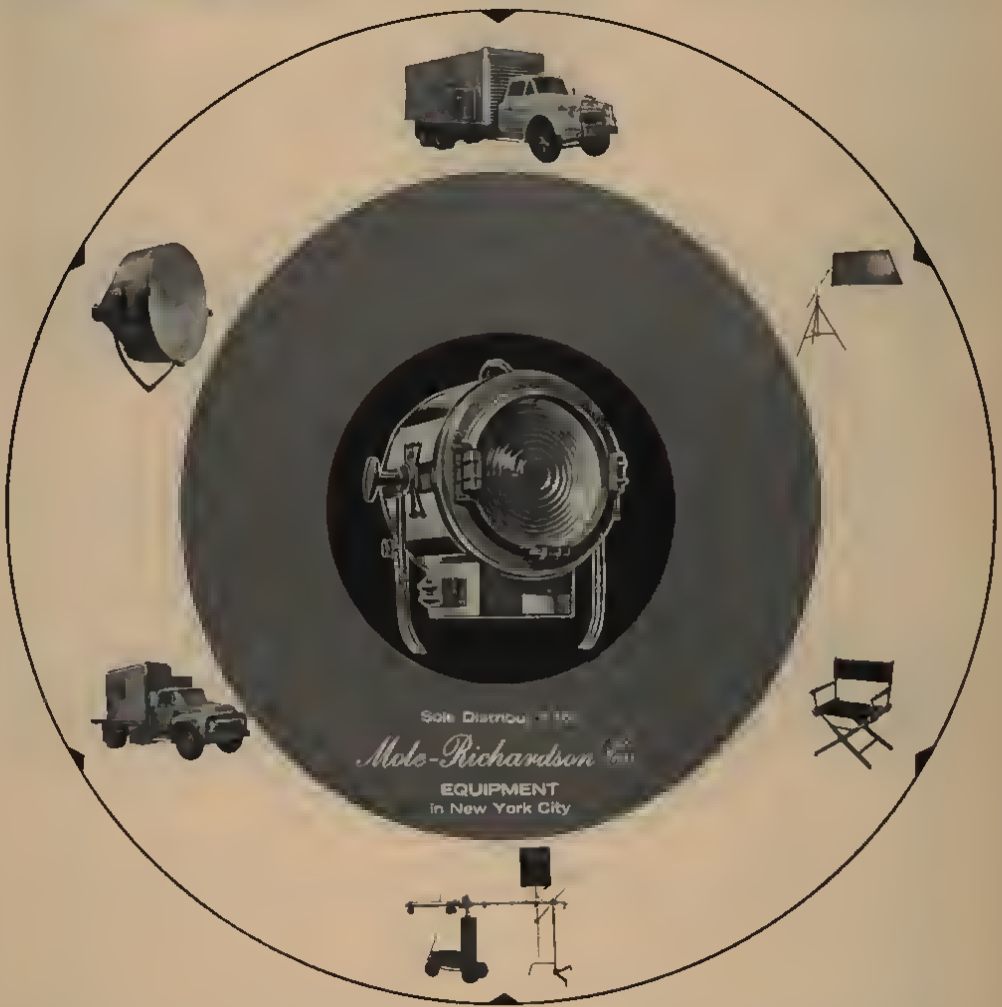

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HOLLYWOOD BULLETIN BOARD

Candid camera glimpses of ASC members and guests at the Society's recent dinner-meetings

TED McCORD ASC displays commemorative plaque presented him recently by Du Pont Photo Products Dept. citing his Academy Award nomination for the photography of "Two For The Seesaw" which McCord photographed with Du Pont Superior 2

ROGER MONTERAN (left) French cinematographer who specializes in helicopter shots, was guest of the ASC at its June meeting when he renewed acquaintance with Joseph Biroc, ASC with whom he has worked on European locations

HARRY WOLF (left above) was one of new ASC members attending the Society's June meeting. He is active shooting TV film productions. At right Mark Davis welcomes new member Ted Voightlander to the ASC. Latter films the "Ben Casey" TV film series at Desilu Gower Studios

HAL MOHR (L) recently-elected Proxy of the ASC, presented commemorative plaque to outgoing president Bill Donlevy at June meeting of Society

OSWALDO C. KEMENI (L) of Rex Films and H. E. Fowle of Lynxfilm Sao Paulo, Brazil, met with ASC members at Society's June dinner-meet. They were in Hollywood to study film lab techniques

ARTHUR MILLER, ASC, Curator of the Society's Vintage Camera Collection, examines venerable step printer donated to collection. Following restoration and a high polish job which failed to reveal any mark of identity of its origin, Miller seeks to learn name of maker. Enlargement of printer is at right. Can you identify it?

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1 Magnecord Recorder PT5AH 15" full track Originally $750 00 NOW $185 00

1 Magnecord Recorder F358 7½" half track Originally $450 00 NOW $120.00

1 Stancil Hoffman Minitape with ranger head As is Originally $800 00 NOW $80 00

1 Ampex P810 with Gangertone Head Originally $1100 00 NOW $795 00

1 Stancil 57 recorder in rack with Selsyn motor Originally $3000 00 NOW $1300 00

2 Stancil S6 dubbers mounted in rack with Selsyn interlock motors Originally $360 00 NOW BOTH FOR $1900 00

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1 Magnasync 135-A-5 35mm Portable Recorder Originally $1600 00 NOW $1400 00

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1 Vega Wireless Microphone Originally $500 00 NOW $350 00

3 American 0-44 Microphones Like new Originally $240 00 .. NOW $50.00

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1 16mm Bolex H Used Originally $325 00 NOW $120.00

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BEHIND THE CAMERAS

WHAT THE INDUSTRY'S CINEMATOGRAPHERS WERE SHOOTING LAST MONTH

BY MARION GOLDWYN

NOTE: Asterisks following titles indicate television film productions.

ALLIED ARTISTS

PHILIP LATHROP, ASC, "Soldier in the Rain" (Blake Edwards Prod.) with Jackie Gleason and Steve McQueen. Ralph Nelson, director.

AMERICAN-INTERNATIONAL

MANUEL BERENGUER, ASC, "Pyro" (SWP Prod., Pancoor, shooting in Spain) with Barry Sullivan and Martha Hyer. Sidney W. Pink, director.

JOE BUTTENBERG, ASC

Back on his home lot, after a stint at Paramount, Joe is shooting "A Global Affair" starring Bob Hope and Lilo Pulver at MGM.

BIOGRAPH STUDIOS—New York

JOHN S. PRIESTLY, "East Side, West Side"*.

CASCADE STUDIOS

WINTON HOCH, ASC, Commercials*.

HENRY FREULICH, ASC. Commercials*.

CHUCK WHEELER. Commercials*.

CBS—N.Y.

CHARLES MACK, LEO ROSSI, ROBERT CLEMENTS, "CBS Reports"*.

FRED HOFFMAN, MIKE ZINGALE, HAROLD POSNER, "Candid Camera"*.

BERNARD DRESNER, "Twentieth Century"*.

COLUMBIA STUDIOS

GIL TAYLOR, "Doctor Strangelove Or How I Learned to Stop Worrying and Love the Bomb" (Trooper Films, shooting in Europe) with Peter Sellers and George C. Scott. Stanley Kubrick, producer-director.

MILTON KRASNER, ASC

Photographing "Company of Cowards" in Panavision at MGM. Glenn Ford stars, and George Marshall is directing this Ted Richmond production for Metro.

CHRISTOPHER CHALLIS, "The Long Ships" (Warwick Films Prods., Technirama-Technicolor, shooting in Yugoslavia) with Richard Widmark and Sidney Poitier. Jack Cardiff, director.

GERALD HIRSCHFELD, ASC, "Fail Safe" (Youngstein-Lumet Prod., Shooting in N.Y.) with Henry Fonda and Dan O'Herlihy. Sidney Lumet, producer director.

GERT ANDERSEN, ASC, "Donna Reed Show"*.

EUGEN SHUFTAN, "Lilith" (Centaur Ents. Inc.) with Warren Beatty and Jean Seberg. Robert Rossen, producer-director.

CHARLES LAWTON, ASC, Commercials*.

ROBERT WYCOFF, "Grindl"*.

FRED GATELY, ASC, "Hazel"*.

WILKIE COOPER, "Siege of the Saxons" (Chas. H. Schneer Prods., T'color; shooting in London) with Janette Scott and Ronald Lewis. Nathan Juran, director.

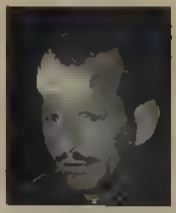
JEAN BADAL, "Behold a Pale Horse" (Fred Zinnemann Prod., shooting in France) with Gregory Peck and Anthony Quinn. Fred Zinnemann, producer director.

FRANK CARSON, ERNEST CAPPARROS, "Farmers Daughter"*.

JACK MARTA, IRVING LIPPMAN, "Route 66"*.

CHARLES WELBORN, "Redigo"*.

DONALD GLOUNER, ASC, Commercials*.



JOE MACDONALD, ASC

At Paramount, photographing "The Carpetbaggers" in Panavision and color. George Peppard and Alan Ladd are starred and Edward Dmytryk directs.

DESILU—Culver City

SID HICKOX, ASC, "Andy Griffith Show"*.

DESILU—Culver City

CHARLES STRAUMER, ASC, "The Greatest Show on Earth"*.

DESILU—Gower

TED VOIGHTLANDER, ASC, "Ben Casey"*.

ROBERT PEARCE, ASC, "My Three Sons"*.

ROBERT HAUSER, ASC, "The Breaking Point"*.

EDWARD FITZGERALD, ASC, "Lassie"*.

FILMWAY STUDIOS—New York

MORRIS HARTZBAND, ASC, "The Defenders"*.

GENERAL SERVICE STUDIOS

HARRY WOLF, ASC. The Beverly Hillbillies*, "Petticoat Junction"*.

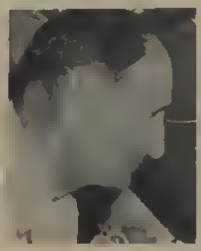
HAL MOHR, ASC. Commercials*.

GOLDWYN STUDIOS

LLOYD AHERN, ASC, "The Fugitive"*.

INDEPENDENT

LOYAL GRIGGS, ASC, "The Greatest Story Ever Told" (Geo. Stevens Prod., UA release, P'Vision & Cinerama in Technicolor with Max Von Sydow and Charlton Heston. George Stevens, producer director.



ED COLMAN ASC

Having a ball shooting "Mary Poppins" for Walt Disney, reputed with special effects via sodium lamp process.

ROBERT KRASKER, "The Fall of the Roman Empire" (Samuel Bronston Prod., Ultra P'Vision & Technicolor; shooting in Spain) with Sophia Loren and Stephen Boyd. Anthony Mann, director.

TED MOORE, "From Russia, With Love" (Eon Prods., shooting in London) with Sean Connery and Pedro Armendariz. Terence Young, director.

Continued on Page 454

PROGRESS — LOYALTY — ARTISTRY — ASC

AMERICAN SOCIETY OF CINEMATOGRAPHERS

Founded January 8, 1919. The American Society of Cinematographers is comprised of the leading directors of photography in Hollywood motion picture and TV film studios. Its membership also includes cinematographers in foreign lands. Membership is by invitation only.

●

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ARRIFLEX choice of "shoestring movie-makers"

On a "shoestring" budget and under conditions that bristle with no margin for error, Ralph and Evi Brooks, husband-&-wife producing team, created "The Magic Tide," a 30-minute theatrical color film which has met great success. The feature, wrote, directed, photographed and edited the film, made in San Felipe, a small fishing village in Baja California. Director Following the maxim that "the boss is the most economical in the long run," they rented an Arriflex 16, and with only "crash" instructions in its operation, Evi Brooks—shooting in sheet for the first time—filmed a charming story of childhood adventure. Original footage was timed up to 30-min for theatrical release. Filming was shot outdoors. Many unusually difficult conditions, covering 120° heat, sifting, penetrating dust and a relative cost. Many of the shots were now-or-never with no director of retakes, but Arriflex came through for the Brookes. " . . . a great piece of camera craftsmanship that has never let us made." The interesting story of the filming was reported in the December 1962 American Cinematographer Magazine.

Successful "shoestring" movie-makers and top budget film producers in industry science and the motion without capitals of the shots found the same satisfaction with Arriflex's production economy performance and dependability. From missiles to rockets, in studio or on reported you can depend on Arriflex.

ARRIFLEX "chases" the X-15 at North American Aviation

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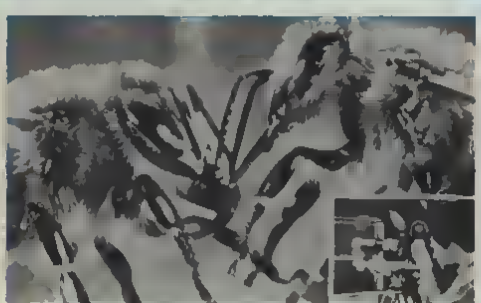
A TRIBUTE TO ARRIFLEX USERS — On the occasion of Arriflex's 10th Anniversary, we are publishing this brochure in tribute to the many friends of Arriflex whose cinematographic skills and resourcefulness have utilized to the fullest Arriflex's exclusive features—thereby establishing its reputation for almost limitless capability.

ARRIFLEX goes underseas in pioneer recording of POLARIS missile launching

Filming of a Polaris missile aboard Polaris submarine U.S.S. George Washington, was affirmed by the Navy launching of its missile into the western Missile Range. News Correspondent Bruno Agronsky selected Producer Lionel Kamsik and a crew of four created an hour-long documentary color film, "Polaris Submarine: Journal of an Undersea Voyage," filmed over NBC-TV Network. Director Tom Priestly and Cameraman Ernest Berner Williams the complex, easily maneuverable Arriflex 16 for the producers job. The NBC cameraman, first TV crew ever permitted aboard during a feature, and the Polaris sub of was their subsequent, the George Washington was under "secret" orders not to reporters – for any reason – for 16 days. Working day and night, approximately 14 hours a day, the cameras were filmed duty hours, church services, recreation activities and "fun" (!) Institute of Mitchell and race, then edited down to the serious business of missile-firing activity – recording the submitted launching crew the activities had been removed. Meeting all challenges on land, in the air on the sea – or under it – Arriflex lives its usual consistency job rapidly, accurately and economically it will do the crew for you.



ARRIFLEX achieves macrocinematographic objective for Moody Institute of Science

A 10-year project of photo-documenting lives maintaining lives Christ, communicating, telling time and even measuring distances geometrically, was culminated over Dr Irwin A. Moon, Director of the Moody Institute of Science, Los Angeles, California completed filming "City of the Seas." In making the notable documentary, which has attracted widespread motion lens host and science, Moody Institute of Science photographed not the majority on the Arriflex 16's minor short features, highly-maneuverable compactness and filmed versatility. Exploring created procedure in macrocinematography they synchronized macroscopic light pulses with the sheet mirror-shutter. This permitted distances the exposure without subjecting the removed, delicate lens to the disturbing, destructive heat of standard lighting. The background story of and filmmaking procedures as reported in the SMPTE JOURNAL, September, 1962 and FILM WORLD of February, 1963.

Utilizing a variety of lenses and lens combinations, the challenges of shooting from moving vehicles within closequarters iron and live areas or combining macroscopic subjects with natural backgrounds — were all easily met. In successfully filming "City of the Seas, Arriflex once again showed itself indispensable as a photographic tool of absolute limitless capabilities. On travelers, or in studio, it will be the crew for you.

NOTE TO ARRIFLEX USERS: These case histories are from a c

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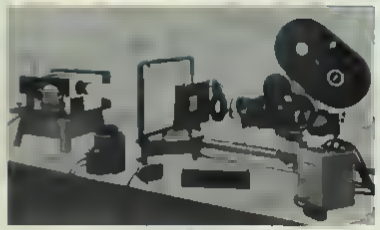
ARRIFLEX goes hunting with the Missouri Conservation Commission

ARRIFLEX covers every angle in upside-down film!



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ARRIFLEX serves medicine in Cineradiography with Philips Image Intensifier

ARRIFLEX monitors crystal growth studies for U S Army Engineers

ARRIFLEX records history in filming "FRIENDSHIP 7's" orbital flight

nt "Arriflex at work" ad series appearing in selected industry publications. If you have an interesting application, please write.

1963 marks the 10th Anniversary of the Arriflex 16. During this decade, it has become a dynamic historian of Man's most ambitious ventures — "from missiles to microbes."

There is no greater tribute to a product than to say it has kept ahead of the demands made upon it by a sophisticated technology. In this respect, Arriflex has proven itself an indispensable cinematographic tool in such diverse fields as Science, Industry, Education, Government, Medicine, Research, News, Sports and Entertainment.

In expressing our gratitude to the cinematographers who have accomplished so much with Arriflex, we pledge that our progressive program of research and development will maintain Arriflex's unique status as "the most versatile, most dependable, money-saving professional motion picture camera."

The coincidence of Photokina '63 and the 10th Anniversary of the introduction of Arriflex 16 Professional Motion Picture Camera into the United States was highlighted by the presentation of a congratulatory silver cup to Mr. Paul Klingenstein (R) president of the Arriflex Corporation of America by Dr. Robert Richter (L) president of Arnold & Richter. Erich Kaestner, chief design engineer of Arnold & Richter shares in the happy event.

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From the microscope to the missile range — from spot locations to sound stages — Arriflex professional motion picture cameras are the dominant choice of filmmakers in science, industry and entertainment. They're lightweight, rugged, tremendously versatile — uniquely suited to a range of applications virtually without limits. Here are some of the features that give Arriflex cameras their remarkable capabilities:

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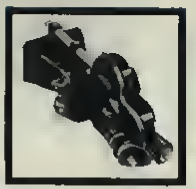

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BEHIND THE CAMERAS

Continued from Page 446

INDEPENDENT

LINWOOD DUNN, ASC, "The Long Corridor" (Leon Fromkess Prod.) Special Effects.

LINWOOD DUNN, ASC, JAMES GORDON, ASC, "It's A Mad, Mad, Mad, Mad, World" (Stanley Kramer U.A.) Special Effects.

HAROLD ROSSON, ASC, "Music at Midnight" (MRA Films, shooting on Mackinac Island, Mich.) with Martin Landau and Nora Swinbourne. Lewis Allen, producer-director.

FRANK PAIKER, "Whistle Your Way Back Home" (Hanna-Barbara Prods. Feature Cartoon) William Hanna, Joseph Barbera, producers-directors.

LEONARD HIRSCHFIELD, "Ladybug, Ladybug!" (UA release, shooting in Penna.) with Jane Connell and William Daniels. Frank Perry, producer-director.

DAVIS BOULTON, "Never Put it in Writing" (Seven Arts Prod., Allied Artists & MGM release, shooting in Dublin) with Pat Boone and Fidelma Murphy. Andrew Stone, director.

RALPH WOOLSEY, ASC, "Man in the Fifth Dimension" (World Wide Pictures Todd AO). Dick Ross, director.

DANNY CAVELL, ALEX PHILLIPS, "The Fool Killers" (Ely Landau Prod., shooting in Tenn.) with Anthony Perkins. Jose Quintero, director.

WILLIAM STEINER, Sr., ASC, "Jr. for Ranger"*

HUGH BELL, "Only One New York"*
AL STACEY, "Championship Bowling"*
SOL NEGRIN, "Army Nurse" (color training film)

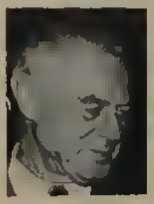
JOSEPH BRUN, ASC, "To Make a Long Story Short"* (Pilot)

KTTV STUDIOS

HAL MOHR, ASC, Commercials*

LONG ISLAND STUDIOS, N.Y.

BORIS KAUFMAN, ASC, "The World of Henry Orient" (Pan Arts Prod.) with Peter Sellers and Angela Lansbury. George Roy Hill, director.



JIM VAN TREES, ASC

Shooting the "Phil Silvers Show" at 20th Century-Fox. Will be shooting on series until December.

M-G-M STUDIOS

LEO TOVER, ASC, "Sunday in New York" (Widescreen Metrocolor; shooting in N.Y.) with Cliff Robertson and Jane Fonda. Peter Tewksbury, director.

WILLIAM DANIELS, ASC, "The Prize" (Roxbury Prod., P'Vision & Metrocolor) with Paul Newman and Edw. G. Robinson. Mark Robson, director.

GEORGE CLEMENS, ASC, ROBERT PITTACK, ASC, "Twilight Zone"*

WILLIAM SPENCER, ASC, "The Richard Boone Show"*

JOSE AGUAYO, "Gunfighters at Casa Grande" (Gregor Prod., shooting in Spain) with Alex Nicol and Jorge Mistral. Ray Rowland, director.

HARKNESS SMITH, ASC, "Dr. Kildare"*

EMMETT BERGHOLZ, "Combat"*

RAY FLIN, "The Tales of Jaimie McPheeters"*.

DICK KLINE, "Mr. Novak"*

FRED KOENEKAMP, "The Lieutenant"*

JOE BIROC, ASC

Photographing "Viva Las Vegas" mostly in Las Vegas for MGM, in Panavision and color. George Sidney directs.

JOSEPH RUTTENBERG, ASC, "A Global Affair" (Hal Bartlett Prod. Seven Arts) with Bob Hope and Lilo Pulver. Hal Bartlett, director.

ELLIS CARTER, ASC, "Hootenanny" (Four Leaf Prod.) with Peter Breck and Ruta Lee. Gene Nelson, director.

ROBERT BRONNER, ASC, "Seven Faces of Dr. Lao" (George Pal Prod., Metrocolor) with Tony Randall and Barbara Eden. George Pal, producer-director.

JOSEPH BIROC, ASC, "Viva Las Vegas" (Jack Cummings Prod., P'Vision & Metrocolor) with Elvis Presley and Ann-Margret. George Sidney, director.

MILTON KRASNER, ASC, "Company of Cowards" (Ted Richmond Prod., P'Vision) with Glenn Ford. George Marshall, director.

THOMAS TUTWILER, ASC, "Commercials"*

PARAMOUNT STUDIOS

GEOFFREY UNSWORTH, "Becket" (Hal Wallis Prod., P'Vision & Eastman color; shooting in London) with Richard Burton and Peter O'Toole. Peter Glenville, director.

ELLSWORTH FREDRICKS, ASC, "Seven Days in May" (Seven Arts-Frankenheimer-Joel Prod.) with Burt Lancaster and Kirk Douglas. John Frankenheimer, director.

JOE MACDONALD, ASC, P'Vision-Tcolor) "The Carpetbaggers" with George Peppard and Alan Ladd. Edw. Dmytryk director.

PATHE STUDIOS, N.Y.

J. BURGI CONTNER, ASC, ANDREW LASZLO, "The Nurses"*

PRODUCTION CENTER, N.Y.

GEORGE STOETZEL, ASC, "The Patty Duke Show"*

REPUBLIC STUDIOS

GEORGE DISKANT, ASC, CHARLES BURKE, ASC, "Burke's Law"*

FRANK PHILLIPS, ASC, "Gunsmoke"*

STUDIO CENTER

JOHN NICHOLAUS, CONRAD HALL, "The Outer Limits"*

Continued on Page 494

SEVEN DAYS IN MAY...

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- T V Graphics, Inc
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- Dolphin Productions, Inc
- Harbert Kerkow, Inc

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- Stuart Miner Advertising
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- Creative Visual Media
- The Heart Association
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- Seneca Productions
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- Mazin-Wyckoff Co
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ARRIFLEX 35MM

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WHAT'S NEW?

Continued from Page 442

16/35 SPRAY PROCESSOR

A new combination 16/35mm negative-positive spray processor, Model S-150R, announced by Filmline Corporation, Milford, Conn., develops positive at 9,000 f p.h. and negative at 6,000 f p.h. Among features are 5-minute processing cycle, two-way temperature control, replenishment flow meters, variable speed drives, thermometer, dual air squeegee, compressor, torque-motor takeup, and silicon applicator. Brochure is available.

EQUIPMENT RENTALS

Mole-Richardson European Service, with offices in five different countries, now rents cameras, prop equipment, dollies, cranes, generators and sound equipment to production companies shooting overseas. Services are available in England at Chase Road, London 10; in France at 28-28 bis Rue Marcelline Berthelot, Montrouge-Seine; in Italy at Via del Velodromo 68-74, Rome; in Germany at Hofangerstrasse 78, Munich; and in Spain at Alcala 32, Madrid 14.

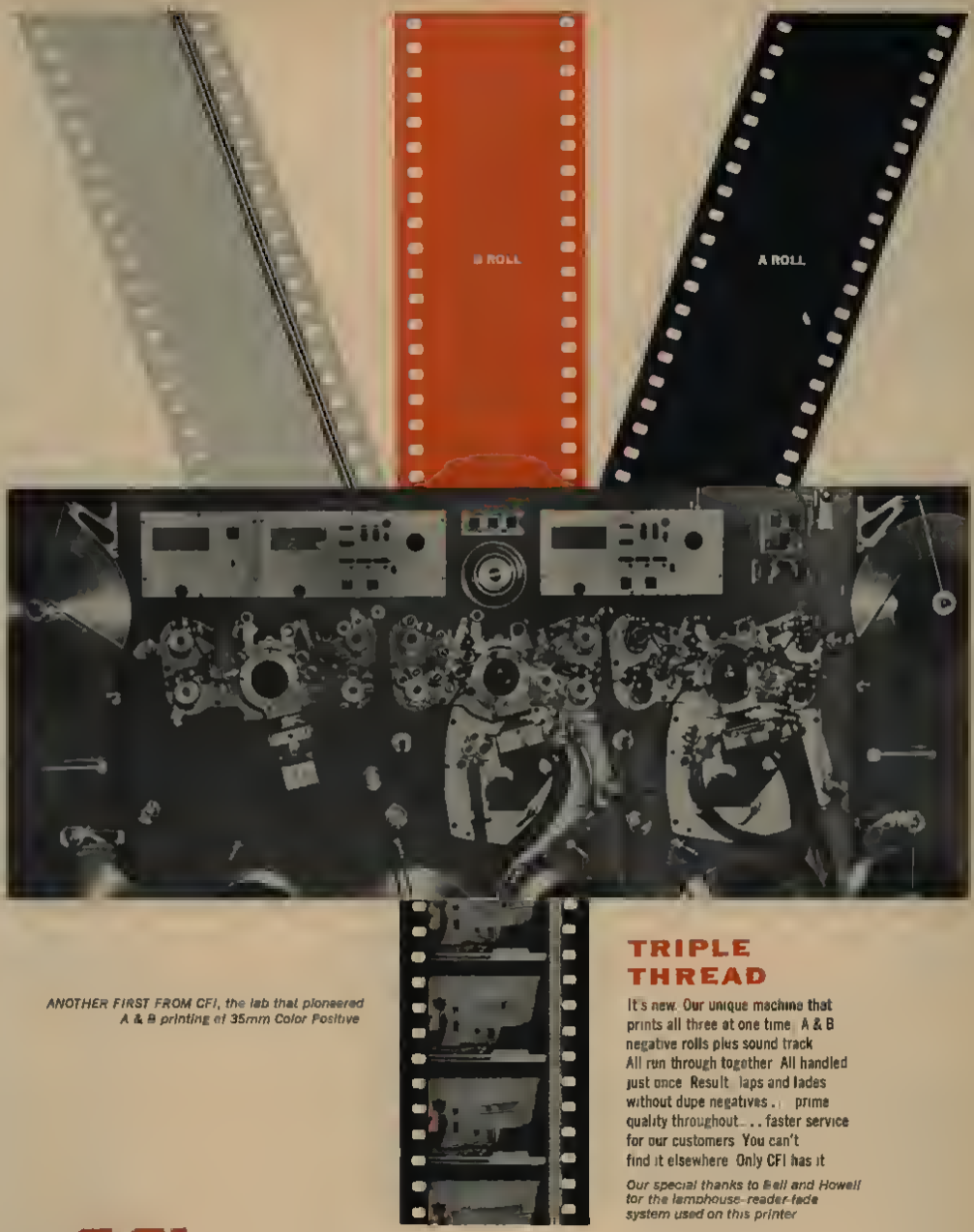
CONVERSION FILTER

A daylight conversion filter for use with ColorTran lamps to permit their use outdoors for fill light is announced by ColorTran Industries, 630 So. Flower St., Burbank, Calif. Made of tempered Pyrex glass and mounted in metal frames, filters are available in two sizes. Filters for the Super-Eight ColorTran lists for $39.95; for the CineKing, Super-Kicker, and Super 60, $19.50. The filters are designed to slide easily into position on the respective lamp housings without use of tools.

BLIMP CONVERSION KIT

A conversion kit for modifying the Arriflex 16 camera blimp is announced by Arriflex Corporation of America, 257 Park Ave. South, New York 10, N Y. Kit permits mounting the 70mm Angenieux Varifocal lens on the Arri-16 so it may be focused and zoomed by remote control from outside the blimp. Follow focus with regular lenses on the camera requires only interchanging them with the zoom lens.

The conventional through the lens viewing feature of the Arriflex is extended and enhanced, with viewing, scene composition, focusing and zooming all being done during sync-sound shooting. ■



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Q & A — Technical Questions and Answers

Q.—*I would like to photograph on 16mm color film a number of 35mm transporencies to fill in for footage I was unable to get on location. I assume the best method is to utilize back ground projection of transparencies, and for this I have a finely grained translucent screen 2 by 3 feet in size 1) is this size screen large enough? And may I pan or zoom? 2) The slides are Kodachrome. I will re-photo graph them with either Kodachrome or Ektachrome. How do I figure exposure 3) What about color temperature? —G T B, Seattle, Wash*

A.—Any size screen may be photo graphed, depending on the amount of light put out by your background projector It is best not to pan on this screen, but you may zoom in directly on your center line 2) Again the exposure will depend on the amount of light put out by your projector. Your exposure will also he governed by the screen size. The larger the screen, the greater amount of light will be required by the BG projector to balance with the amount of light on the foreground object 3) The color temperature of your projector lamp should be 3200° K.

Q.—*I shoot a great deal of footage from distances of 1,000 feet and more, and while thus far I have been able to determine exposures pretty accurately (by taking readings on nearby objects grass, tree trunks, the ground, etc.) this is at best guess work If there is a meter that will measure subject light from distances of 1,000 feet or more, I want one—provided, of course it contains T-stop settings or a quick method of converting from f/-stops —H.H.McG, Detroit, Mich.*

A.—There is no fixed ratio between T stops and f/stops which would apply to all lenses The difference between T-stop and f/stop is something that is determined hy the design and construction of each particular type lens. The difference between T and f/stops represents light losses within the elements of a given lens. Consequently, this is not a factor which can be incorporated into an exposure meter, since the exposure meter must function in connection with many different lenses.

Many cinematographers have excellent success determining exposures for distant outdoor subjects by using an incident light exposure meter This meter is used at a location where the illumination is the same as that at subject's location Outdoors, the illumination is usually uniform over a considerable area, so that frequently the incident light meter can be used right at the camera location

In connection with outdoor photography of distant objects, it is usually important to also use a haze filter on the camera lens to eliminate the adverse effect of haze, which may be invisible to the eye but which tends to produce an effect of over exposure.

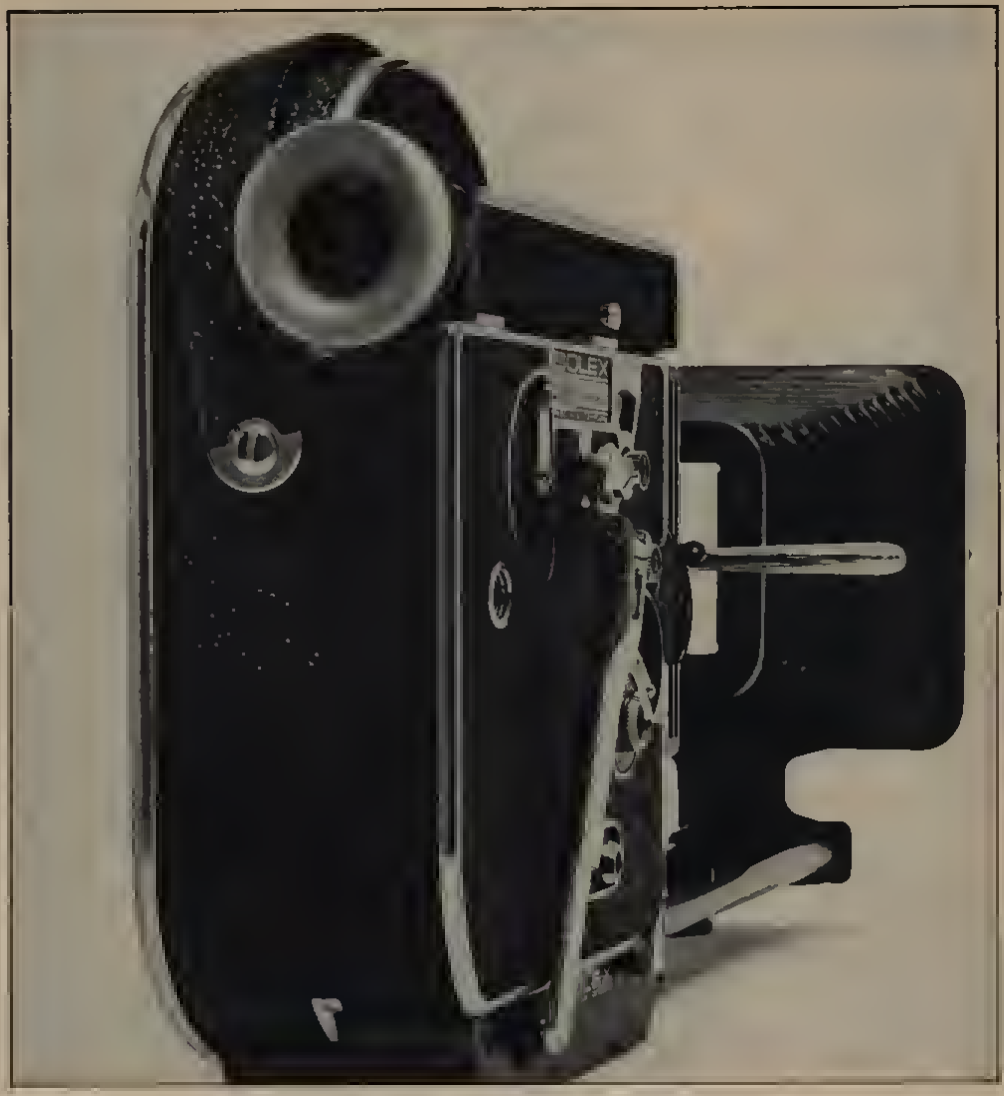
Q.—*My film processing machine is designed to handle reversal and negative/positive developing, and is equipped with a tank having capacity of 4.5 gallons of solution When should I replenish the bath and what are the keeping properties of the bleach bath in reversal? Can you also suggest a reference book dealing with laboratory practice for neg/pos film and chemicals?—P.R. Philadelphia, Pa.*

A.—Write to Eastman Kodak Company, DuPont or Ansco and request their books on chemical analysis These will answer all the immediate problems with which you seem to be faced. The companies named also have books available on film laboratory practices and procedures.

YOUR QUESTIONS

Only questions on technical problems can be answered in this column Kindly do not write asking for information such as names and addresses of industry personnel, who photographed certain pictures, etc.

Also—please enclose with your letter a stamped, addressed envelope if reply by mail is desired.



Bolex H-16 Rex-2: three-upmanship

Going one up on the Bolex H-16 Rex is almost impossible. But Paillard found three ingenious ways to refine viewing, focusing and fade control. The new reflex viewfinder gives you a life-size 1:1 image with the standard 25mm lens. The payoff is in needle-sharp focusing. The variable shutter is engraved to indicate four positions from fully open to fully closed. And whea the shutter is not fully open, a new yellow safety signal pops into the reflex viewer to tell you so. Fade-ins and fade-outs are precisely controlled. The new eyepiece is adjustable from plus three to minus three diopters to suit the vision of the individual. If you're an experienced moviemaker, you probably know tbe standard features that have made this Bolex a global favorite. Otherwise, better get to a Bolex dealer straightaway. Why the matte box? Just a reminder that it is one of the most versatile Bolex accessories—for titling and special effects. Can you imagiae anything Bolex H-16 Rex-2 can't do? Tell us. $500 with Lytar 25mm f/1.8 lens. Paillard lacorporated, 1900 Lower Road, Linden, N.J. In Canada: Garlick Films Ltd., Toronto. BOLEX

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Cameraman Edward Colman is shown on a sound stage of the Walt Disney Studio, during the filming of tests on Disney's upcoming musical-fantasy, "Mary Poppins." Colman uses a Mole Richardson "Titan" arc to achieve a particular effect in the scene he is about to film

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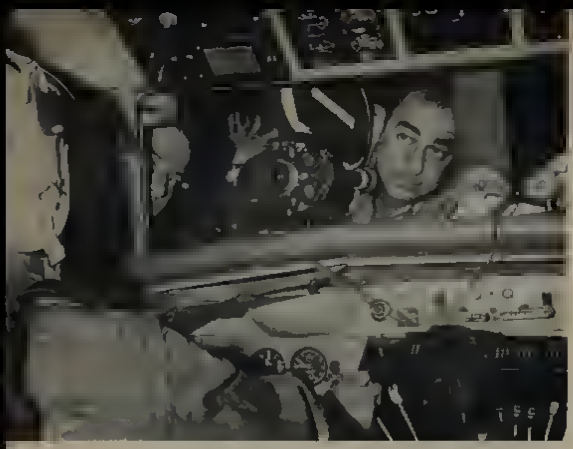

AUTHOR HIRSCHFELD lines up Arriflex camera for closeup of pilot in cockpit of flight simulator. Miniature photo lamp, for right, is being set to illuminate actor at close range

CINEX TESTS are examined by Hirschfeld and his gaffer, Buddy Fortune. Shooting at extremely low light levels required constant check of exposures and lab work

HIRSCHFELD plays light from snooted inky-dink spotlight on shaded eye of player during the shooting of a closeup

LOW KEY FOR 'FAIL SAFE'

Low-key lighting on the players, normal lighting in the sets enhance the realism of this unique story of an accidentally-triggered air attack on Moscow.

GERALD HIRSCHFELD, ASC
Vice President, MPO Videotronics, Inc., New York

IT WAS WITH PLEASURE that I received a call asking me to take a leave of absence from the world of television film commercials to direct the photography of a new feature film, *Fail-Safe*. It had been eight years since I had done any feature film work and I really felt ready again.

While reading the story in book form (there was as yet no script), I jotted down my impressions as how I would photograph this absorbing story. During my first conference with the director, Sidney Lumet, I showed him my notes. He concurred immediately and I knew we had a meeting of minds and ideas. The excitement of doing this extraordinary film was heightened when I learned of the various problems filming the production would entail.

The story of *Fail-Safe* deals with an accidental air attack on Moscow, the efforts exerted in trying to call the bombers back, and the climactic decision of the President of the U. S. as he talks to Moscow on the "hot line." It also brings to light various philosophies pertaining to an accidental attack and the reactions to it. The story demanded a stark approach photographically, and after much thought I decided that all the feature characters should be filmed in extreme low-key light, but that the sets should be photographed as they would normally be in actuality. An example is the scene of the President (played by Henry Fonda) in his bomb shelter; here the room is lighted relatively bright but the President and his translator appear in semi-silhouette.

EXAMPLE OF cross light illumination without fill light which Hirschfeld employed in lighting players for dramatic effect. In background is huge radar screen showing bomber positions

OMAHA WAR ROOM SET—Technicians react to sudden victory of U S bombers as viewed on huge radar screen. Note overhead section of wall removed to afford front projection of radar images

CLOSEUP VIEW of radar projector orifices in wall above players. The images ostensibly are projected on large screen opposite

ARRANGEMENT OF rotating color wheels set up behind the radar ports shown in adjoining photo, which created desired lighting effect.

Approximately thirty per cent of the story takes place in the vast underground nerve center of the Strategic Air Command in Omaha. In actuality this room is a complex of electronic computers, radar devices and a world-wide radio and telephone communications center with a direct link to the Pentagon and the Chiefs of Staff and, of course, the President.

In projecting our story a few years hence, we enhanced the already incredible actual situation with a radar screen of tremendous proportions, thirty-five feet wide and twenty feet high, surrounded by an enormous assortment of computors, telephone equipment and radar devices. The art director, Al Brenner, had his problems in designing and constructing the largest set ever built at the East Coast Fox Studios, where the picture was filmed.

My problem was not only to put the projected radar image on this huge screen, but figure out how to do it on a 100-foot stage with a 90-foot set in it! And, to top things off, director Lumet told me to be prepared to make 360-degree pan shots on this set, which meant that no lights could be on floor stands.

Our most serious problem, perhaps, was that of space, or rather the lack of it. We could have used a nearby armory which would have provided ample space for the rear projector and the extra large set, but hanging lights and recording sound for almost one third of our picture here would have been utterly impracticable. I realized also, that using wide angle lenses on the camera and trying to get extreme oblique angles on the 35 by 20 foot screen would result in an almost black screen image, due to the camera being so far off the projector beam, especially when dollying across the screen. Screen light balanced for one angle would not be correct for the opposite angle; multiple projectors likewise would not work.

The solution was to use *front* projection on a flat matte screen, but it meant keeping the actors and mike boom out of the projector beam. Using a scale ruler, a protractor, plus lens and projection field

Continued on Page 482

FIG. 1—Tape playbacks (left and right) feed sound through mixer (center) to a recorder equipped with Rangertone sync-pulse head

FIG 2—The recorder (Berlant Concertone), equipped with Rangertone sync pulse head, and mixer which integrates signals from playbacks

FIG 3—Narrator seated before microphone in soundproofed room separated from recording, watches screen for sound cues

FIG 4—Tape timing leader and film leader are marked for "start" as pictured here, assuring synchronization of picture and sound

Photos by Caroline Bailey

Tape Recorder Set-up For Mixing Music And Narration

Simple method makes use of music and effects with narration economically feasible for low-budget 16mm films.

By EDGAR PARSONS

Audio Visual Services Department,
Chamber of Commerce of the United States

MANY FILMS OF the sound-over variety can be made inexpensively yet with professional recording procedures, using ordinary tape playbacks and a single synchronous recorder

Quite frequently, industrial film producers find it necessary to forego the use of music and sound effects because of the cost. The usual procedure is to record the narration against the edited workprint picture, transfer the original recording to sprocketed magnetic film —usually 16mm—and edit the narrative track, together with "A" and "B" music tracks—also on 16mm magnetic film—mixing the three to make a final track which can then be transferred to optical film for final printing.

The equipment necessary to accomplish this includes no less than three 16mm magnetic dubbers, a 16mm magnetic recorder and a mixer capable of handling the product of the various channels. Not all industrial film producers of course, are fortunate to have ready access to such sophisticated equipment A simplified system is outlined here which, if handled with skill, will result in acceptable sound for business films without the use of 16mm magnetic film channels.

The secret lies in the use of a single synchronous tape recorder which, combined with a synchronous motion picture projector, will yield sound of adequate quality for transfer direct to an optical printing track Associated equipment necessary includes two tape playback units of reasonably good quality and a simple mixer which will allow control of the volume from each of the playback units and a microphone

Continued on Page 488

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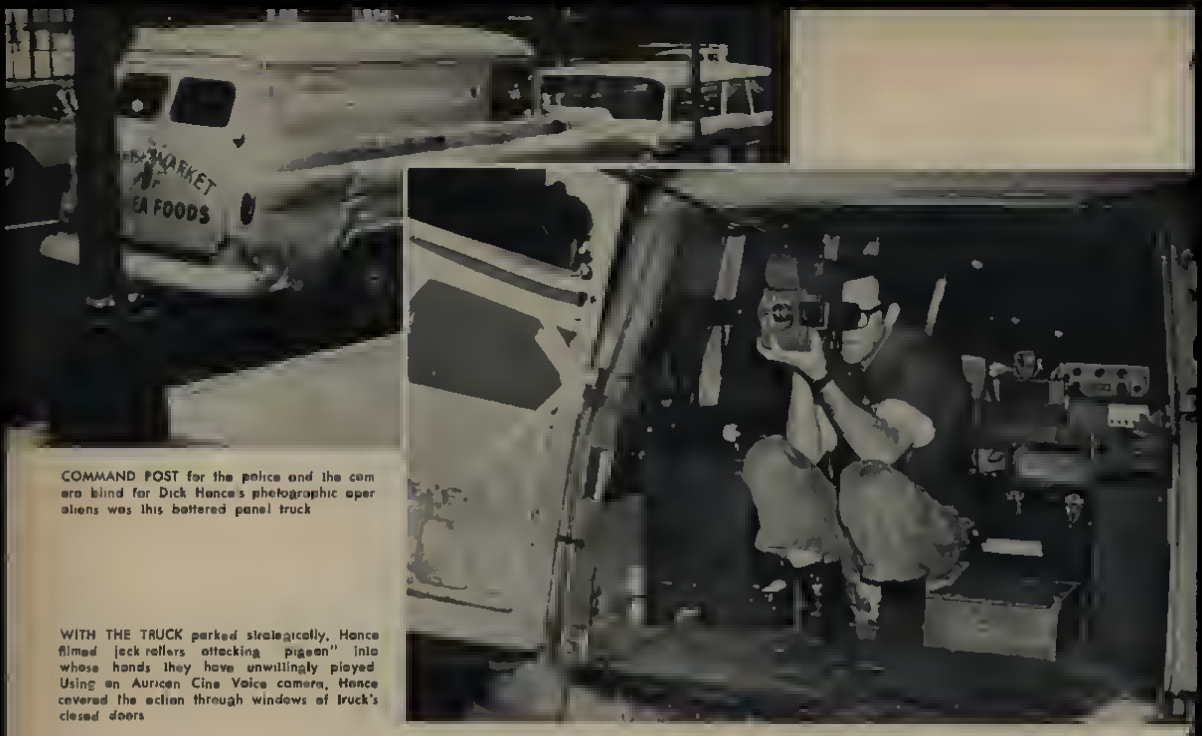
Cables: Malereng-Madrid
General Manager: Gregario Sacristan

ENGLAND — Chase Road, Landan, N.W. 10
Cables: Malereng-Landon
General Manager: John A. Page



COMMAND POST for the police and the camera blind for Dick Hance's photographic operations was this battered panel truck

WITH THE TRUCK parked strategically, Hance filmed "jack rollers attacking pigeon" into whose hands they have unwillingly played. Using an Auricon Cine Voice camera, Hance covered the action through windows of truck's closed doors

Shooting Under Cover With Available Light

Shooting unobtrusively from inside a battered panel truck, WGN-TV's Dick Hance films realistic on-the-spot action for a documentary presentation of a crack Chicago police squad tracking down jack-rollers and muggers.

By BOB ALLEN

A LIGHT, MIDNIGHT rain had left a glistening sheen on Chicago's West Madison Street. Neon lights shone desolately in the darkness. The city's large fluorescent lamps bathed semi-circular portions of the street's harsh exterior in deceivingly soft hues. At the fringes of one fluorescent arc, a small knot of men stood in a clump of shadow. Here and there, dark shapes hugged doorways or drifted aimlessly by. An old battered Chevrolet panel truck, emblazoned with the legend, "Joe's Fish Market," rattled past, evidently on its way to the Randolph Street market.

It was about two A.M. on an October night, 1962. A drunk staggered up the street, raucously wheezing a garbled melody. He paused under the street light near the group of men, one arm braced against it. A dry retch shook him. A convention badge glittered on his well-tailored gabardine topcoat. His soft felt fedora was pushed onto the back of his head. A smear ran down the front of his tieless white shirt. Genuine leather shone dully from dirt-streaked shoes.

He pulled a sheaf of disheveled bills from his pocket, clumsily shuffled them together like a deck of cards, and rolled them up. A rubber band snapped in the night as he slipped it over the roll. On the other side of the street, a paper blazer stretched across a tavern window proclaimed: "Conventioneers Welcome."

The drunk launched himself from the lamppost and, now singing again, staggered up the street. A pair of eyes followed him. The eyes rolled and their whites flashed like a semaphore in the dark. Two men disengaged from the group nearby the lamppost and walked slowly, apparently aimlessly, in the

DICK HANCE, who photographed and produced "TUF Guys—The Profile of a Secret War" for WGN-TV, grew up in the broadcasting business (His father was a pioneer in the field) He obtained an electrical engineering degree in college, but his true love, photography, caught up with him and he started his professional career as a still photographer for the Great Northern Railroad Later, he shot motion picture travelogues for the company in Glacier National Park During the last war, he served with the Marine Corps in the South Pacific as a combat newsreel cameraman.

Returning home, Hance founded a motion picture production company in Minneapolis. Then, in 1947, he saw the potential for motion pictures in television and helped form a news department for KTTP, a newly-opened TV station in Minneapolis He is credited with building that station's news programs to the highest audience rating in the Twin Cities In 1958, he helped start KOB's television station in Albuquerque, New Mexico Today this station also enjoys the highest news program ratings in its area Hance joined WGN-TV early in 1961 as a TV news producer and is now Executive Director of TV news.

DICK HANCE

woke of the drunk.

Under the back collar of the drunk's gabardine topcoat, a tiny transistor earphone crackled: "You got eyes, boy, got eyes." The drunk weaved up the street.

Now, another voice came through the concealed receiver: "Go to the second street, Sam, turn left. Go in the alley on your left. But stall. We need the time."

Minutes later, Sam stumbled into the alley, his two trackers drawing closer. Lighting the mouth of the alley was another bright fluorescent street lamp Its rays barely glinted on the back bumper of a truck parked about 200 feet up the alley On the side of the truck, the legend, "Joe's Fish Market," was unreadable in the pitchblack darkness.

Now, a third voice came through the coat-collar receiver: "Keep coming . . . keep coming . . . now, right there . . . fine, perfect . . . hold it, Sam . . . that's perfect."

Sam bent over, his hands gripping his knees. He began to retch again. The two men following him drew up and grabbed Sam by the arm.

"Whatsamatter, buddy, you sick?" The other man took Sam's other arm. They felt his pockets, under his arm, for a weapon Sam mumbled incoherently.

"Now, just give us your money," one of the men said Sam pulled back.

"Give us your money," the man said again, his voice tight and vicious. He punched at Sam's face.

"HIT!" Sam yelled at the top of his voice. "HIT!" came a multi-throated reply. Running shapes converged on the struggle. Out of the fish truck scrambled more figures Sam sliced the edge of his hand, Karate-fashion, into

Continued on Page 484

"PIGEON," imitating a drunk, staggers along darkened street in attempt to draw out jackrollers from hiding place Communication is maintained with police and Hance in camera truck by means of two-way radio

CONCEALING wireless microphone in clothing of a policeman who acted as pigeon during a "run" photographed and recorded by Hance.

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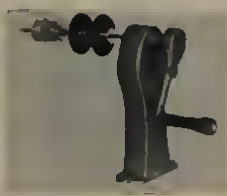

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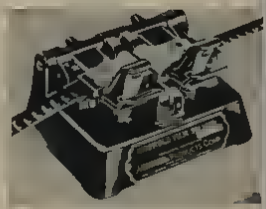

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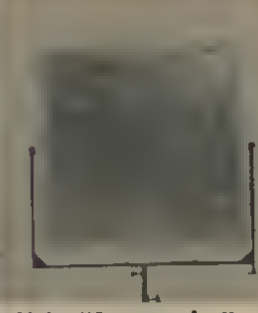

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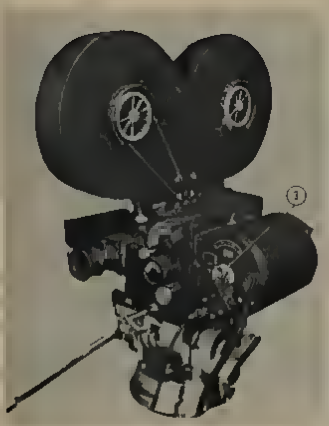

SYNC-GENERATOR assembly mounted on Mitchell NC camera. Strobe disc (3) is attached to motor shaft. Exciter lamp housing is just below it

THE STROBE (4) mounted on motor drive shaft of a Mitchell BNC camera (with blimp cover removed). Exciter lamp housing is mounted on end of motor bell

Sync-signal System For Lip-sync Recording

Stroboscopic photo-diode sync-generator simplifies field recording of lip-sync sound with most professional 16mm and 35mm cameras.

By HERB A. LIGHTMAN

THE RECORDING of lip sync sound in locations where generated electrical current is not available, where trained technicians are few and far-between and where equipment must often be carried considerable distances by hand, has long constituted a problem for producers of independent features, documentaries, and scientific, military and commercial films, also in-plant film units shooting on location.

The ideal equipment for solving this dilemma would have to conform to certain definite specifications. It would include an extremely lightweight, portable, high-fidelity sound recorder which would operate on universally available batteries — a recorder so rugged, yet so simple technically that it could be operated by a single untrained worker. The system would also have to be adaptable to a wide range of cameras without mechanical alterations to the original filming equipment.

Efforts to solve the special lip-sync sound recording problems encountered by camera crews of the Air Photographic and Charting Service (APCS) in filming U.S. Air Force assignments have lead to combining established techniques with new applications to provide a major advance in ¼-inch synchronous tape recording. The commercial production of this equipment for general use may well revolutionize lip-sync recording in many fields of film production.

For APCS camera crews working in the field, the problems of recording double-system, lip-sync sound are considerably more complex than those encountered on a well-equipped Hollywood sound stage. During recent filming operations in Viet Nam, for example, fairly cumbersome sound recording equipment often had to be placed in the hands of a not-too-experienced technician working alone under combat conditions 10,000 miles from the home base. Even though all possible precautions were taken, such as employing identical or common power sources to drive both camera and recorder, all too often a sound track arriving from a distant location would be found to be out of sync with the picture. Also, the sound quality was often far below professional standards, simply because there was no quick and accurate way to check it in the field.

Clearly, a way had to be found to insure precisely accurate sound synchronization in the field regardless of any possible erratic operation of the equipment. It was even more important to devise a method by which a relatively inexperienced operator, working alone in a distant location, could quickly and easily check right on the spot to make sure that the sync and sound quality were acceptable. In most cases, if a malfunction is discovered immediately in the field, it is relatively easy to schedule a retake; whereas, if it goes undiscovered until the track reaches a stateside APCS motion picture studio, such a retake might prove extremely difficult or impossible to film.

The challenge of devising such a system was taken up by Robert W. Houts, Sound Division Electronic Maintenance Supervisor at Lookout Mountain Air Force Station in Hollywood, home of the 1352nd Photographic Group. He employed the basic principle of the Rangertone system of synchronization, a method in which both the camera and recorder are driven by synchronous motors; signals referencing the frequency of the power mains are recorded as sync impulses on ¼-inch magnetic tape. In

THE COMPLETE recorder assembly weighs only 25 pounds. All operating controls and switches are on panel below as are the VU meter and sync level and camera speed monitors

effect. these sync impulses become electronic "sprocket holes" for the tape and provide positive synchronization with the picture film.

Houts emphasizes that the basic principle is not new. It has been successfully used for a number of years. However, the earliest applications of the technique made no provision for the weak link which may exist between the power mains and the film running through the camera. If, for some reason, there is slippage in the camera drive system, a sync method such as the Rangertone would not indicate this discrepancy in the sync index recorded on the tape, he points out. For example, if the camera is driven by a three-phase sync motor and one leg of the motor is open, the motor will still operate, but not at sync speed. More than likely it will turn slower, throwing the sound out of sync with the picture.

The logical method of correcting this fault, it has been pointed out, is to take the sync index, not from the power mains, but from the camera drive motor itself. This method, while not at all new, was arrived at independently by a number of sound engineers and has been in use for several years. In the most common application the sync index is provided by a small permanent magnetic (tachometer) generator mounted on the camera drive. The camera and/or recorder can then be operated from either an AC or DC source insofar as the sync index transmitted to the recorder is a direct reference to the camera speed. More than ten years ago the late Col. Ranger suggested a similar method for use with Mitchell cameras, but with a commutator mounted on the camera instead of a permanent magnetic generator.

The problem encountered by the Air Force in applying the method to its operation was more complex, however. It required, first, that the system be applicable with virtually no modification of original camera equipment. Second, it called for a simple mechanism for providing sync impulses that could be rapidly applied by a relatively inexperienced operator to the wide range of cameras employed by APCS crews in the field, using tools no more complicated than a screw driver or Allen wrench.

Investigation proved that the tachometer generator method previously

Continued on Page 490

DIMENSION 150

Economies in production, closeups without distortion, among advantages claimed for new ultra wide-screen system.

DIMENSION 150 is the newest development in the field of wide-screen motion picture processes. Developed by Dr. Richard Vetter and Carl W. Williams, objective of the process, according to the inventors, is to provide theatre audiences with a sense of participation and realism commonly experienced by Cinerama viewers, but without the shortcomings inherent in a triple-film process.

COMPARISON of 35mm negative with 65mm negative used for Dimension 150 system

Dimension 150 is a single film 70mm process which utilizes 65-70mm equipment and film—65mm in photography, 70mm in printing and projection. Its unique elements are embodied in a special curved screen and new optics for use in combination with photographic, printing and projection steps of the process.

In a press preview presentation in Hollywood last month, the system was carefully outlined but no screen demonstration given. This is promised for a date early this month at which time, developers Vetter and Williams have promised, the different uses to which D-150 negative can be put—70mm, CinemaScope, 35mm, 16mm, etc.—will be demonstrated.

Among the claims made for the process are greater flexibility of ultimate projection, economies in production, closeups without distortion, greater definition and color distribution without aberration, and elimination of cross reflections by means of a new type of solid perforated screen.

Interesting is the fact Dimension 150 calls for no elaborate and costly equipment. Existing hardware, such as 65mm cameras, printers and projectors can be used for D-150 when fitted with the system's special lenses.

At present, the company's plans call for servicing producers, who wish to make pictures in the Dimension 150 process, with the necessary camera or cameras and the range of four lenses of varying fields of view (see illustration). They also will provide film printing services, assistance of technical consultants and screening facilities.

Two types of 70mm release prints can be supplied: one optically printed for the system's conventional deeply-curved screen, and the other contact-printed for flat screen projection. The optically-made print is squeezed horizontally (as contrasted to the vertical squeezing of CinemaScope prints).

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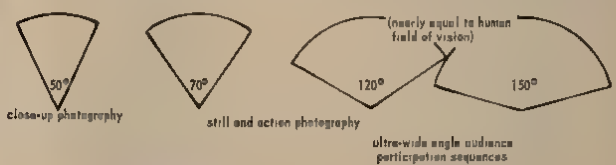


FIELD OF VIEW of the 4 lenses used for Dimension 150 photography range from 50° to 150°. Cameras used are 65mm.

FILMING 'interior exterior' on set erected on sound stage Tons of earth and rocks were bulldozed into place before the cyclorama background An arc provided 'sunlight

FILMING ON LOCATION—Bob Jones University camera crew prepares to shoot scenes of the Second Battle of Manassas for Red Runs The River Some of the cannon were real, others were wooden replicas

Battle Scenes And Model Shots

Bob Jones University's latest production, 'Red Runs The River', displays excellent skills in the filming of miniatures and effects.

BY BOB HARRISON

THE PRODUCTION OF any dramatic motion picture is a task that staggers the imagination. The writing, the research, the designing and construction of sets and costumes, the casting, shooting, editing—these represent literally thousands of hours of work, the combined talents of hundreds of dedicated people and a maze of technical equipment The job is made doubly difficult when the story deals with historical facts and famous people Every facet of such a production must be painstakingly checked for authenticity

In view of this, it is amazing that a university film department could successfully produce a film like *Red Runs The River*, a 90-minute color Civil War epic Nevertheless, Unusual Films, the cinema unit of Bob Jones

SET UP USED TO get desired trucking shot of train approaching trestle on which it is later wrecked

ESTABLISHING SHOT of trestle—a scale miniature erected by the University students The soldiers standing on top are toys

FILMS OPENING scene was long, complex crane shot revealing, piece by piece, some of the remnants left after battle of Manassas. Filmed on indoor exterior set, lighting taxed equipment facilities to capacity.

KATHERINE STENHOLM, director of Unusual Films, lines up a cover shot of General Ewell's camp site at an old water mill—staged on a nearby location site. Camera is a 16mm Kodak K-100.

University, Greenville, S. C., has done it. Of all the shooting problems, probably the most challenging came from the battle scenes and the model shots. A rolling meadow about ten miles from the University campus was chosen for the second battle of Manassas because of its similarity to the real battleground. Katherine Stenholm, director of Unusual Films, and her camera crew moved to the location, bag and baggage.

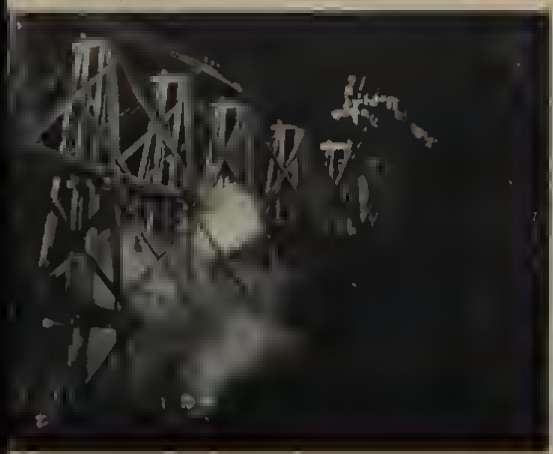
A communications network was set up rivaling that of any Hollywood production company. When a visitor showed his pass to the guard at the location entrance, a courier bus was summoned by radio. On the set, one-half mile away, additional walkie-talkie units were stationed at key points such as the make-up tent, the camera locations, and the opposing camps. A public-address system blanketed the entire valley.

A production crew of sixty used five 16 millimeter motion-picture cam-

Continued on Page 478

DIRECTOR Katherine Stenholm (seated, center) watches action being filmed by cinematographer Wade Ramsey, using Mitchell 16 camera elevated on boom.

LOW ANGLE VIEW of train entering trestle as powder is ignited that will blow up the span—shot with a Mitchell camera at 128 fps.



THE EXPLOSION—Trestle is blasted apart and the train falls through the gap to bottom of gorge. Fog maker simulated steam from crushed engine.

DEVELOPMENT SEQUENCE—These six photos illustrate the progressive steps in the production of an extensive special effect sequence that involved a combination of techniques. (1) is commencement frame of long shot of city roofs; (2) Camera tilts down to canal bridge detail and effect of water reflection on glass; (3) camera pans from bridge to exterior painted wall, thence to rear projection screen. Note rear projected image entering frame from left. (The sequence is continued below.)

(4) Start of studio truck-in shot in one-to-one copying position; (5) intermediate frame on studio truck-in; (6) final frame to closeup of key player. (Photos by Les Holmes, courtesy of the National Film Board of Canada.)

Combined Techniques In Visual Effects

National Film Board of Canada studio technicians employed glass painting, rear projection and moving camera to achieve unique visual effect for film in current historical series.

A GOOD VISUAL FILM effect is often the result of combined techniques. This was recently demonstrated by the Special Effects Division of the National Film Board of Canada under the direction of Wally Gentleman, CSC. Among its diverse activities the N.F.B., at the Montreal Headquarters, is currently engaged in the production of films designed to portray incidents in the historical development of the Canadian nation. Such a film involved the life of an European explorer whose native city was Venice in the year of 1485. The problem of linking this ancient city and a stage-directed action fell to the special effects staff.

Production at N.F.B. is usually in 16mm and the production photography under Director of Photography Denis Gillson, CSC, employed this gauge. Special provision had to be made for the first stage operation of the process shot by filming a plate in 35mm. A 35mm BNC was substituted for the 16mm Mitchell production camera and was crane mounted.

Since a period interior Venetian room set had been erected for the scene following the process shot, only a minimal addition to the set was needed for process plate exposure. This consisted of a casement window built into flats and a sill on which the lead actor would sit gazing out into the dusk of evening.

The camera was positioned to field a long shot embracing the casement window and as much of the exterior building facade as the set would allow within the full gate aperture framing. After twenty

feet of stationary camera run-up, the camera was jibbed down from a height of eleven feet and trucked in to field the artiste in medium closeup in a timed run. The approved take was then processed to a master fine grain and a 4″ x 5″ still enlarged from the original negative at the static commencement of the take.

The still was secured behind a sheet of tracing paper and a three-point perspective of the scene was noted and a scale pencil sketch made in continuance of medieval city structures. This sketch was to serve as an approved key drawing and enlarged on a panel of prepared glass 8′6″ by 6′6″. It had been decided that the Venetian room set should be overlooking a canal and in order to lead the eye into the glass painting, a ninety degree canal juncture was planned to curve away into an horizon. This implied the planning of a variety of vanishing points and constant recourse to medieval painting reproductions for accuracy of historical detail.

From charcoal delineation to complete oil painting, the graphic progressed whereupon an area of glass comprising the casement window was rendered clear and included view of the canal through which a water effect would be applied The reverse side of the glass painting was rendered opaque. A combination of process projection, nodal point photography and camera movement would now complement the glass shot technique.

The N.F.B. is the fortunate possessor of a Mitchell background projector, a Moviola crab dolly and Worrall geared head. The Worrall with an offset adaptor plate is admirably suited to position a camera lens in the center of its panning arc and center of its tilt action. The blimped Mitchell 16mm was offset in such a fashion and counterweighted for ease of operation.

At a distance behind the glass painting the 7″ lens of the Mitchell background projector was aligned to project a full aperture area to a Bodde fine grain rear-projection screen, set approximately 1′3″ behind the quarter plate glass bearing the painting. This depth was essential since the arcs flatly illuminating the painting would inevitably wash out the rear projected image with front light if set closer to the glass panel.

In process photography long focal length lenses on projector and camera are desirable and depth of field is therefore shallow. To maintain depth of field between painting and rear-projected image, two Mole-Richardson Brutes were employed to light the painting and render a stop of f/8.

Continued on Next Page

WALLY GENTLEMAN, CSC (behind camera), adjusts remote control to focus process plate on rear projection screen before him while Doug Manning (left) sets camera counterweight Note offset adapter plate between the Mitchell 16 and Worral head

NATIONAL FILM BOARD production team in action filming the process shot Here may be seen all the components mentioned in the accompanying article — including the process projector in right background Note use of Brutes to illuminate the set up

UNIQUE DEVICE simulated effect of rippling water in the process shot It consists of hammered metal reflection drum and is being moved on the set here by stage carpenter John Parisien Arc source reflections from the hammered indentations of drum diffused through vaseline smears on glass provided the desired visual effect

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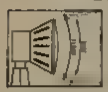

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VISUAL EFFECTS

Continued from Page 475

The camera mounted on the crab dolly was aligned to a one-to-one copying position diametrically opposing the projected image to finalize the termination of the camera track. This critical position was noted by taping a 2" x 4" x 6" riser to the studio floor. With the camera in this position the process plate bearing the previously shot studio action was run, focused remotely from the camera position through Selsyn exchange. By viewing the brilliance of the rear-projected image against the tone of the painted wall in which it was to be inserted a light balance was established.

Since parallax had been eliminated by nodal lens mounting, panning from painting to rear-projected image demonstrated no shift between the elements in the final copying position. Since the tone of the painting had been made to harmonize with tone of the plate picture edge, no join line could be detected.

The Moviola dolly was moved some 25' away from the painting and the jib raised to maximum height. With the Worrall head in a strictly horizontal position, a long shot over the city roofs including a third sky area could be seen. The plan was to truck forward and when jibbing down en route, to tilt down into the city and between the rows of houses lining the canal. With the jib two thirds lowered, a bridge across the canal would be framed. The line of the bridge would be followed to lead into an upper story foreground wall and finally come to rest at the projected casement window.

Twelve feet from the painting, however, a diagonal movement of the camera dolly had to commence to reach the final left-hand copying position. A back-panning on the geared head to produce a camera movement to the right as the dolly was moved to the left successfully negated this movement. A sure reversal of pan as soon as the dolly found its final station was mandatory to ensure continuity of movement without a disturbing jolt.

Beneath the canal bridge, a flow of water had to be simulated. A 5' x 4' clear glass panel was attached at an acute angle to the main painting frame. Upon this surface, white petroleum jelly was smeared and individually lit for highlight reflection. Behind the two panels, a hammered tin plate cylinder was mounted on a wheeled truck. Arc source reflections from convex indentations on the tin plate diffused through the vaseline smears provided the effect of softly rippling water. The animation necessary to the apparent water flow was provided by the parallax drift occasioned by the crossover movement of the Moviola crab in traversing the painting. The movement was more accelerated than desirable and a stagehand was engaged to move the reflection drum in a reverse direction to the parallax shift during the exposure.

The timing of the camera track was deliberated after consultation with the film editor who also decided at which frame on the process plate the pan on to the rear projected image should begin. Black leader was then spliced to the sync frame and was of sufficient length to cover the duration of the camera movement. Since the process projector and the camera were made to run in interlock, correct track timing ensured the appearance of the sync frame at the rear-projection screen in time for the final nodal pan. During the pan, the last three feet of the former twenty-foot static action heading the process plate were retained. On completion of the pan, one-to-one copying of the plate transferred the former 35mm studio crane action to the 16mm footage. The entire shot became linked as a longshot of old time Venice, movement through the canal area to a casement window, and tracking-in to a medium closeup of the lead actor—all in one continuous sweeping movement as an introduction to the film.

Thought was given to continuing the action through the casement window and following the artistes into the room by utilizing a practical set wall through which the camera crane would pass. This continuation could have been effected with ease.

As with all visual effects, alternative methods are available to yield a similar result. Miniature projection printing through a miniaturized painting would have been one alternative. This was rejected by realization of the strictures practical miniaturized painting would involve and a possible duplication of a rear screen image carrying the texture of the fine grain rear projection screen. A scale model miniature city having an intrinsic three-dimensional aspect before a

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practical set would be desirable but hopelessly expensive. Aerial image equipment was just not available for consideration

One Mitchell rear-projector is an enviable acquisition. Nevertheless, a method was devised to make one double for the work of two when the project was under consideration. The problem of rear projecting a canal water plate and the set action from two different projector locations would have been determined by applying a 45° periscope made up of two front surface mirrors set three feet apart in a containing framework and mounted horizontally before the projector lens

The water plate would have been spliced to the set action plate and projected via the mirror set-up to the canal area At the appropriate moment the device would be swiftly removed and set plate projected directly ahead to the area prepared to receive it. Such a system implied a slightly wider painting and was therefore rejected in favor of the stage effect device described earlier.

Special photographic effects at the National Film Board of Canada are applied to films intended for theatrical, educational. instructional and documentary presentation. This involves travelling matte, process projection, matte-painting, model and stage effect procedures and the support of traditional associated crafts in providing economic service and forceful motion picture footage of high production value. ■

BATTLE SCENES AND MODEL SHOTS

Continued from Page 473

eras to cover the action A Mitchell was normally used on a crane and a Maurer, Arriflex, and two Kodak K 100's were tripod-mounted On occasion the Mitchell was used on a dolly.

Generally, trucking and dolly shots were not possible because of the roughness of the terrain There is one dolly shot in the battle sequence, however. made with the studio's crab dolly. For this a smooth bed was laid on the ground. This consisted of 2x4's as crossties with large sheets of plywood laid on top. The bed was leveled with wedges so the dolly would run smoothly on the plywood "track." A driver steered while crew members pushed the dolly.

The use of approximately 600 students as soldiers presented a filming problem in that the time they could miss classes was limited. A great deal of footage had to be exposed while they were available in order to provide the film editor with sufficient cutting angles. Thus. important shots were planned and set up and as they were being filmed, roving cameramen shot "from the hip," getting anything that looked good, while staying outside the boundaries of the main camera angle A number of good shots turned up unexpectedly this way

The three scenes employing miniatures and models were a part of a sequence in which Confederate General "Jeb" Stuart and his cavalrymen carry out two raids in one night. The first took them to a railroad trestle held by the Yankees, which they blasted just in time to send an oncoming U S supply train tumbling into the gorge below. The second raid was on a Yankee camp and resulted in the burning of several supply wagons. This sequence consumes only ten minutes of screen time although several months were required in the preparation of it The models are seen for only about 40 seconds.

First, a full-scale wooden trestle, part of a nearby railroad. was photographed on location at night with the aid of carbon-arc lamps and a generator truck. A section of the trestle was then reconstructed life size on the sound stage for close shots, and a scale model was built for the actual explosion.

The section of the trestle to be blown away was carefully broken out and reassembled to look solid yet break apart easily Thus the effect of the explosion would be both controllable and predictable To the break-away supports and cross-pieces, small but powerful powder charges called "bullet hits" were attached to the back side of the supports.

The original drive motor of the miniature train was removed and the train drawn over the tracks by means of a strong thread concealed between the rails. It was attached to the engine by an "S" hook which was large enough so that when the train struck the broken section and tension on the

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Le projecteur contient un obturateur Simplex antérieur transformé avec deux clavettes intermittent Les films de 16mm ou 35/32 tournent avec une vitesse de 144 pieds a le minute, tandis que les films de 35mm tournent avec une vitesse de 165 pieds á la minute

1. Le regulateur de voltage d'intensité d'eclairage.
2. La lampe de 500 watt est nécessaira pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mise pour rafraichir la chambre de la lampe).
3. L'objectif de 2½ est instelé.
4. La manette de mise en marche et d'arret controle en meme temps la lampe et le moteur.
5. La boite de films avec noyau peut contenir 3000 pieds du films.
6. La roue supérieure est construita de manière de recevoir le film dans les deux directions, nourrie per le bobine centrale.
7. Une roue est instalée pour libérer rapidement le film de la boite.
8. La lampe se trouve pres de la bobine recepteuse, et donne toute facilité pour inspecter le film a main dans le projecteur.

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Questi proiettori sono Simplex transformeti, otturatora al fronte, meccanismo di scatto di due punte. La velocitá di proiezione in 16 o 35/32mm e di 144 piedi per minuto, e in 35mm, di 165 piedi per minuto.

1. Controllo manuale della luminositá della lampade
2. Lampade di 500 watt per 16mm e di 1000 watt per 35mm
3. Obbiettivo di proiezione di 2½".
4. Maniglia per controllo di motore e lampeda di proiezione.
5. La cassetta porte pellicola puo contenere 3000 piedi.
6. I rulli superiori di guida sono construiti per operare con film provenente di ambi lati della bobina svolgitrice.
7. Disco con montatura sporgente nel magazzino.
8. Una lampadine illumine la bobina avvolgitrice, permettendo l'ispezione manuale del film prima che si avvolga nel proiettore.

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Esta máquina es un proyector simplex convertido, obturador al frente y movimiento intermitente a doble grifa Para 16mm o 35/32mm, la velocidad fija de proyección es de 144 pies por minuto, para 35mm es de 165 pies por minuto.

1. Un reosteto controla la intensidad de la lampara de proyección.
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3. Cada unidad está provista de un lente de proyección de 2 pulgadas y media.
4. Una palanca de control opera el motor y la lampara simultáneamente.
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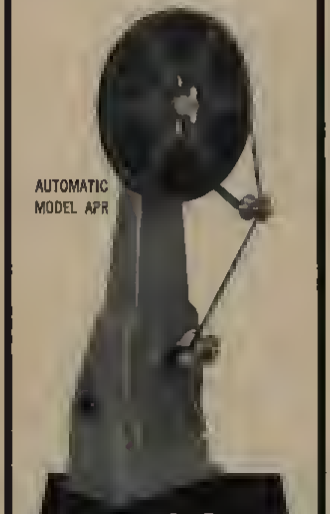

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thread was relieved, it would release and not be seen attached to the train as it fell in front of the camera. A fog maker was concealed under the hillside on the right of the set Its nozzle faced a funnel arrangement which terminated at a concealed hole in the ground, where the derailed train was expected to land. On impact a burst of fog simulating the steam from a ruptured locomotive boiler would issue forth.

When everything was ready for the take, the train was backed off on its approach ramp and its trailing wire hooked onto the battery charger which acted as its power supply, energizing the fan inside the locomotive, the smoke maker in the stack, and the train lights When the smoke was streaming out of the stack adequately, the signal to "roll 'em!" was given and the Mitchell 16 was brought up to maximum high speed, 128 frames per second. An assistant at the opposite end of the trestle then began pulling the train steadily by its thread, and brought it on the trestle at the desired rate of speed. When the train reached a spot a few inches away from the beginning of the breakaway area, another technician threw a switch which ignited the explosives and blew up the bridge. (See photos.)

To build up the suspense that was needed to make the trestle explosion exciting, the train was established coming down the right-of-way at top speed as it approached the trestle. For full effectiveness, it was done as a trucking shot. This required construction of a miniature dolly—a high hat on a metal frame which rolled on rubber casters in a channel-iron track. The train track was mounted on a plank laid on top of stage risers.

UNUSUAL FILMS—the Division of Cinema of Bob Jones University, Greenville, S.C.—has gained international fame in recent years for its outstanding productions Among the unusual aspects of Unusual Films, not the least unusual is the director The fact that she is a woman is unusual enough in a field monopolized by men.

Katherine Stenholm, a petite brunette and as attractive as a screen heroine herself, has been a member of the Bob Jones University family for over twenty years. When the University decided to institute the Division of Cinema. Mrs Stenholm was chosen to establish and administer the new enterprise Upon the opening of the studios in 1950, she found herself at the head of one of the best-equipped motion picture production units between New York and Hollywood The large, air conditioned sound stage is furnished with the latest in cameras, lights, sound equipment, cranes, booms, dollies, etc

Although they work several thousand miles from the film center of America, there is nothing provincial about Katherine Stenholm and her staff She studied at the University of Southern California. Periodic visits to New York and the West Coast (where she is well-known and respected by outstanding film directors, designers, and technicians) keep her up-to-date on the latest technical developments

As a matter of fact, some things about Unusual Films are ahead of time The Bob Jones University studio was the first in the country to use magnetic sound in all of the production and editing processes up to the final printing stage. When no satisfactory splicer for sound tape was found on the market, members of the Unusual Films staff developed their own.

During the time that Mrs Stenholm has administered the University's motion picture enterprise, she has twice been named "Director of the Year" by the National Evangelical Film Foundation, and films which she has directed have won numerous awards for excellence, including the Silver Medallion of the Screen Producers Guild.

The University's Division of Cinema is considered one of America's foremost college film departments. The Journal of the Society of Motion Picture and Television Engineers has rated the cinema education program of Bob Jones University as one of the "top three in the nation"

A survey printed in the Journal of the University Film Producers Association lists Bob Jones University as one of the "nine institutions in the world which provide considerably broader programs of instruction than the other schools in this field."

Mrs Stenholm and her staff look upon their work as a ministry and not a profession. Of "Red Runs the River," she says, "This story afforded Unusual Films with an excellent opportunity to present the message of the Gospel By showing the conflict within the life of General Ewell, we have sought to make everyone who sees the film aware of his own spiritual need"

Because this was a trucking shot it was important for both the dolly and train to move synchronously so that the train would stay in frame. An arrangement of pipe was attached to the dolly that extended up and over the miniature trees set between the dolly and the train, and was well out of the camera field of view. Attached to it was a length of metal rod which hooked onto the engine—on the side away from the camera. Thus, it was simply a matter of the train towing the dolly at the proper speed.

Immediately following the trestle explosion in the picture is a scene in which Stuart and his men raid and burn wagons in an enemy camp. For this it was necessary to construct a a model camp in reduced scale for an establishing shot that would intercut with live location shots filmed earlier of the cavalry burning a number of enemy wagons. The scale for the wagons was determined according to how they would look between foreground and background. The camera was set on a tripod about 62 inches above the floor and left there during the entire building process so that all work done on the set could be viewed in correct perspective through the finder.

How Fira Effects Achievad

Miniature wagons were to he seen burning in the foreground. Small auto bulbs were used to simulate campfires among the tents, which were nothing more than rectangular pieces of white paper folded down the center and propped up on the ground. Beside the bulbs were holes in the ground from which smoke issued from smoke-makers installed beneath the set. The latter consisted of glass eyecups filled with fog juice, which was heated by small electric coils inserted in the cups.

The filming of this important scene required an establishing shot of the camp before the cavalry attacked, then several cut-backs as the wagons were set ablaze. After sufficient footage of the static scene had been shot, each of the foreground wagons were ignited. First, a piece of thin aluminum sheet was placed in the bottom of each wagon to prevent the fire from burning through the wagon bottom and dropping to the table, since much of the scene was as flammable as tinder. Then a wick soaked in paint thinner was placed in each wagon.

As the camera rolled, the wagons were successively ignited hy an assist-

The serious looking character above is using a Birns & Sawyer Fishpole Sound Boom. He concentrated so hard on using a Birns & Sawyer boom that he forgot to attach a mike. It always helps to pick up sound if you use a mike. Especially if you also remember to plug it in.

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ant with a touch stick, allowing the camera to record the scene with first one then more wagons blazing. A cranking speed of 96 frames per second was used for filming the burning. It required only 15 seconds for each wagon to be reduced to its wheels by the flames.

For the filming of the Second Battle of Manassas, a battery of cannon (six-pounders) were required to be fired in a single artillery barrage. Unusual Films was able to procure several Civil War artillery pieces. To complete the closeup scenes, wooden replicas were fabricated by the construction crew; and for long shots, additional silhouetts were made. The wooden replicas could be loaded and fired with surprising realism.

Also used in the battle scenes were many genuine Civil War rifles and 50 working models manufactured by the staff of students. Hundreds of additional dummy rifles were made. Members of the Bob Jones University science faculty prepared ground explosions and smoke bombs for use during the height of the battle. When the skirmish begins on film, all the elements of a real war are there; the viewer can almost smell the gunpower.

Obtaining a narrow-gauge railroad of civil War vintage was a bit more difficult. "Tweetsie" was the answer. "Tweetsie" is now a tourist attraction in Blowing Rock, North Carolina. The owners gave Unusual Films full use of the antique steam engine. In *Red Runs The River*, "Tweetsie" had to change her name twice. She appears once as the "Orange and Alexandria Railroad," and again as the "Virginia Central."

Like all actors, "Tweetsie" had to wear special make-up—about one ton of it—including a new smokestack, head lamp, a cowcatcher, and a new coat of paint. In the final scene, a train was heavily draped in black for the last journey of General "Stonewall" Jackson's body.

When one considers that *Red Runs The River* is a motion picture produced by a university and not a high-budget company, and that the production unit was composed of only 12% professionals (the remainder, students in the university and cinema department), the accomplishment is quite impressive.

The fact that such a group would tackle a project of this magnitude when the scene lengths were to be so short in the final form speaks highly of the department's—and particularly of the director's—zeal for realism. ■

LOW KEY FOR "FAIL SAFE"

Continued from Page 463

charts, I came up with the answer. The cast, it was decided, would have to stay at least sixteen feet away from the screen and the projector would have to be elevated thirty feet above the stage floor. With these facts and figures in mind the set was designed and constructed. So the center ceiling section over the control rooms was hinged to open and permit the projector to throw an image on the screen as the camera panned off of that view and onto the "radar" screen side of the SAC control center.

Most of the lighting was concealed within the structure of the set, with very few overhead lamps used to light other sections. The vastness of the set plus the accompanying noise of the thirty odd simulated computors necessitated the use of a wireless microphone and loudspeakers to give instructions to the crew.

Another, and probably most serious problem that had to be solved was how to get a normal density negative with so very little light. Due to the large size of our process screen and use of front projection, I had only *nine foot candles* of light hitting the screen, with the film print out of the projector! We also used a 10-1 zoom lens for several scenes. This lens had an aperture of T:4. But these were two set conditions over which I had no control. However, I did have control of the negative processing. Tests not only showed that a normal negative was possible with the low screen light intensity of nine foot candles and a stop of T·4, but the results so enhanced the photography that special processing was used throughout the production, except for a few exterior scenes.

One problem situation that really paid off one hundred per cent happened in a flight simulator filmed on location at La Guardia Airport. Due to the extreme close quarters (actual cockpit conditions), I decided to use an Arriflex camera with a synchronous motor. In order to cover a scene showing the pilot, co-pilot, and navigator I realized that no "normal" wide angle lens would cover the area in such close quarters, however, a 14.5mm fixed-focus lens did the job, and so well that we used the same lens mounted on a BNC Mitchell camera for many of the more spectacular shots made in the studio.

Due to the fact the actors had to wear helmets and oxygen masks, they couldn't hear each other nor could the director hear them. This meant installing earphones and tiny microphones within the oxygen masks. The sound department also installed high fidelity recording mikes in the masks. The resultant sound quality was so realistic and the unblimped camera noise so well eliminated that this original sound track will be used in the completed film instead of dubbing.

Quarters were so close in the flight simulator that normal clip-on type photo lamps could not be used for illumination. We used, instead, small reflector spot bulbs about one-inch in diameter and about three inches long, including a socket and swivel joint, which we taped to the superstructure of the plane.

Another location problem arose from the use of a 16mm projector as a rear screen projector to provide the simulated effect of a radar screen aboard a B-70 "Vindicator" bomber. I had no interlock motor available for the Arriflex camera so we equipped the 16mm projector with a synchronous motor, removed the shutter, and were able to achieve perfect synchronization with the camera by a slight manipulation of the camera motor.

My decision to film the main characters in a manner that was a complete departure from normally accepted techniques produced a style of photography that was a perfect complement to this extremely dramatic film. My reasoning was that the characters of this story represented widely varying political philosophies rather than individual characterizations. Therefore, they were all filmed in a similar stark manner, using direct cross light with no fill light at all. A small snooted inkidink was sometimes added to light only the eye on the dark side of the face so that the expressions could more easily be seen. This light could never be preset. Instead it was hand-held because the slightest turn of the actor's

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head required that the light follow the eye that it was illuminating.

Another departure from normal techniques resulted from the fact that the very nature of the film story required fast direct cuts from widely separated locations. In order to take in as much of a set as possible to keep the audience oriented in closeup shots of actors, I used a 25mm or 30mm lens and moved the camera in very close. This gave me the image size that was required for the closeup and also an extremely wider area behind the actor so that it was easier to tell just which set he was in. Any distortions this created only added to the dramatic effect.

Statistically, ninety-five per cent of *Fail-Safe* was filmed with lenses within the range of 14.5mm to 30mm focal length. This in itself created additional problems of framing areas outside of the 185:1 aspect ratio we were filming in. The size of the set and the physical distances covered within split seconds required the use of the new 10:1 (25mm to 250mm) Angenieux zoom lens to move from closeups of the "radar" to wide shots of the Omaha war room. Oblique an-

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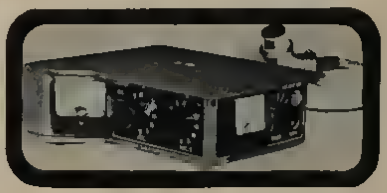

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gles showing the same thirty-five foot wide radar screen and foreground action often required the use of the 14.5mm wide-range lens. It was a strange sight to see the five pound zoom lens that protruded fourteen inches from the BNC replaced with the 14.5mm lens that was actually recessed within the camera housing.

Fail-Safe abounds in lighting effects which were used to create specific conditions and yet save time and money and bring the picture in on budget. The large radar screen image is supposedly created by the light impulses of many radar projectors, converting electronic messages into the composite image seen on the screen. John Hubley, winner of the 1962 Academy Award for animation, created the animated radar material which was front-projected.

The radar projectors were nothing more than two inch holes in the set walls behind which was a panel of frosted acetate to diffuse the light from a 150 display lamp with a rotating color-wheel. The ever-changing light densities of the color-wheels gave the effect of a radar projector light. (See photo.) A 4x5 slide projector converted a sound dubbing room into a miniature "war room." Small desk and "radar" screens enabled me to light all the army men at their consoles in the big Omaha war room with concealed thirty-watt reflector spots. On a reverse angle, in which the radar screens were seen by the camera, we replaced the reflector spot with an eight-watt home night-light and used a transparency over it to represent a radar image.

I believe *Fail-Safe* represents many "firsts" in new cinematic techniques: The first time "front" projection was used extensively for a major set; the first time a feature film was photographed without the use of a single "fill" light on a face; and, perhaps, the first time a feature film of over 570 camera set-ups was made without as much as a half hour of overtime within its thirty-day schedule. A great sense of accomplishment was experienced when the many pre-production problems were reviewed and compared to the final successful solutions that not only gave life to an exciting novel but enhanced it very dramatically. •

SHOOTING UNDER COVER WITH AVAILABLE LIGHT

Continued from Page 427

one attacker's shoulder. The man slumped over, screaming, dropping to his knees. The other attacker turned to run. He was dropped in his tracks by a flying tackle.

Inside the fish truck parked nearby, Dick Hance, executive producer of TV news for Chicago's WGN-TV, handheld an Auricon sound motion picture camera and recorded the action through a rear door window. Beside him, audio engineer Clyde "Bud" White twisted dials on his sound equipment.

In the alley, David André of the WGN-TV staff, who had leapt from the truck when the struggle between Sam and his attackers began, held up a microphone connected to a portable tape recorder slung from his shoulder.

This was a "run," one of the many which Hance and his WGN-TV crew made with the Chicago Police Department's Tactical Undercover Function's squad in the course of producing a one-hour television news presentation entitled, "TUF Guys—The Profile of a Secret War."

The TUF squad was created in 1961 to combat the jack-rollers, muggers and armed robbers who were prowling the streets of Chicago at night. Hance had previously spent several weeks riding with the squad to research the possibilities of a filmed news presentation of the subject.

"The big challenge," Hance says, "was to put this story on film under realistic conditions and with natural sound. We didn't want any staging. We wanted the real thing. Considering the horrible lighting conditions under which we had to operate, we're still amazed at what we did get."

Hance shot about 6,000 feet of East-

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man Tri-X Reversal Film, Type 7278. He used two motion picture cameras: an Auricon Cine-Voice sound camera and a Bell & Howell 70 DL, both fitted with Bell & Howell 1-inch f/0.95 lenses.

"We purposely used the fastest film and the fastest lenses available." Hance says "And then we processed the living daylights out of the film." Superior Bulk Film Company in Chicago developed the Tri-X in special runs at 800 to a 1000 ASA

"From a photographic point of view, of course," Hance said, "the natural question is: how was the grain? And one answer is: on television, you can't see it

"But, more to the point, lighting conditions were generally so bad that just getting an image on the film was quite an accomplishment Quality was secondary Obviously, the quality we got wouldn't do for a staged situation comedy, for example. But for a dramatic news presentation filmed under seemingly impossible photographic conditions, it was wonderful"

Hance also shot stills, using a Bell & Howell Cannon camera, a 50mm f/0.95 lens, and 35mm Tri-X film. The stills were used for promotion for the TV program and also to make up a complete photo album which was presented to members of the TUF squad.

Installed in the fish truck, which was the "command post" for "runs," was a large 12-volt power inverter which changed the truck's battery power into 110-volt AC current for operating Hance's sound camera, a tape recorder and radio receivers.

There were two receiver systems. One was the police frequency system, which was employed to maintain communications between the "drunk," the police "covermen" on the street, and the sergeant of the TUF squad who was stationed in the truck This system also operated through the tiny transistor receiver pinned under the "drunk's" coat collar.

The "drunk," or, in police terminology, the "pigeon," also had concealed on his person a wireless microphone which provided broadcast quality. Its output was fed into the sound camera or into the tape recorder when silent film was being shot. The output of the police frequency system was also fed to the film sound track as natural background.

After a "hit," the noise and scuffling renderd the wireless microphone in-

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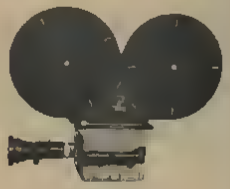

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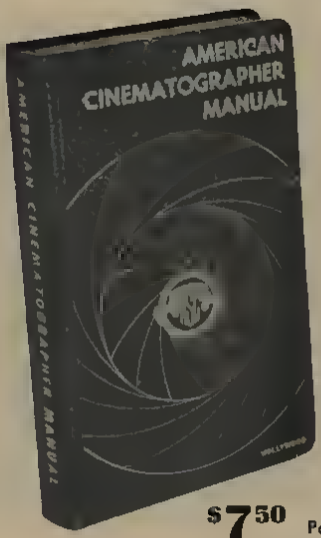

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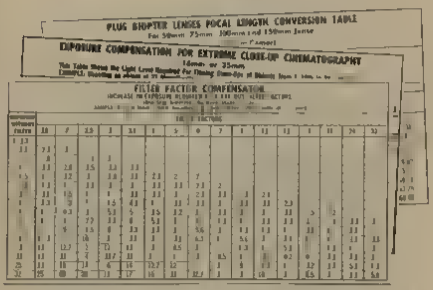
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effective. So at this point, Andre went into action with his portable tape recorder. Sound recorded from this point was dubbed in later on the film.

Hance and his crew had covered 17 "runs" made by the police squad. However, only four were successfully recorded on film due to such factors as the truck being out of position for the "hit," sudden steaming-up of truck windows, or impossible lighting conditions encountered. In all, the WGN-TV staff worked on the project two months, five nights a week, from 8 P.M. to 4 A.M.

One helpful factor was that most of the alleys in Chicago have fluorescent lights situated at the entrance, and these served to silhouette figures roaming in the darkened areas. Tri-X film proved particularly sensitive to the blue lights of the fluorescents.

Another "plus" factor was that Hance was actually able to direct the "pigeon" by means of the police frequency system and get him into favorable positions for filming, just as he did in the "drunk run" previously described.

Natural Sound Used

Natural sound was used throughout the production. Scripted action was held to a minimum and was used primarily to brief the audience in TUF squad techniques.

Each night, the squad, which is actually one of three 10-men groups in the Tactical Undercover Function, meets in an empty lot in an area that is to be covered. Previously, the squad assembled at headquarters where an area was selected based on police statistics indicating where strongarm robberies and slugging have been taking place.

One man is designated as the "pigeon." Other members of the squad become "covermen." They are dressed drably to blend in with the surroundings. They proceed cautiously down the street, a man in front and in back, and across the street from the "pigeon." After a "pigeon" gets "eyes," the "run" proceeds as previously described.

Three runs were shown in the televised production. The first involved a "lady of the night" who attempted to lure a "pigeon" to her apartment. The second followed through a complete "run," including the "hit" and book

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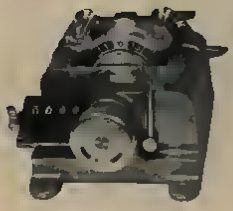

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ing of the jack rollers at the police station

The last run was also complete, and it was done entirely in natural sound Other runs were partially or all scripted In the final run, Hance got a photographic break The hit took place in an alley in which lights had been placed on the sides of buildings both at the alley entrance and approximately 100 feet inside

"It was just like a Hollywood set," Hance laughs "There was ample light so that our film detail was perfect, but not so much that you could readily identify the subjects there."

Interspersed throughout the show were specially filmed sequences showing TUF squad members practicing Karate and shooting pistols in a police training school. There was also a comedy bit—a hefty policeman dressing up as a woman "pigeon" The show was climaxed with a brief address by O. W. Wilson, Chicago police superintendent.

Televised on a Monday night, 9-10 p.m., in February, 1963, the show was an overwhelming success Sponsored by Sears, Roebuck & Co., it was screened back-to back with a top network program, and matched it in audience ratings.

The sponsor bought the show for televising the following Sunday, 1 30-2:30 p.m It captured more than 50 per cent of the viewing audience This kind of response had previously been unheard of for a news presentation produced by an independent local station such as WGN-TV. The show also won a 1962 63 Emmy Award for Dick Hance "for the high degree of excellence attained while filming under extreme conditions" ■

MIXING TAPE SOUND

Continued from Page 464

While this kind of setup is not satisfactory for mixing dialogue tracks in which each word is synchronized with the picture, it will do nicely for most pictures in which narration and music are used It solves the two most pressing problems confronting the industrial film producer: cost and convenience. Certainly the cost is far less than resorting to 16mm magnetic film, and just as certainly it is a boon to those producers who are located remotely from a well-equipped sound studio having the necessary mixing equipment for 16mm film.

The following is an outline of the required complement of equipment, together with detailed procedure for mixing music and speech with tape recorders:

EQUIPMENT: Two tape playback units of reasonable quality.

One tape recorder with synchronous motor and a sync signal circuit (Rangertone, Pilotone or equivalent), which can be "read back" by a sound studio or film laboratory equipped for the purpose (Fig. 2).

One synchronous motion picture projector.

One mixer—for tapes and microphone (Fig. 1)

PROCEDURE 1. On the film workprint leader, measure three feet ahead of the first picture frame and punch the frame. Now measure ahead another six feet and mark this frame "sound start" (Fig 4). (This is a special cue for starting the projector when you record the sound, and does not correspond to the "printer start" mark which you will later place on the white leader of the original film).

2. Transfer the music to tape from whatever source: phonograph, live performance, other tapes.

3. Measure the workprint footage for each music sequence and translate into minutes and seconds (A "Ready-Eddy" computer is ideal for this).

4 Edit each taped music sequence by timing with a stopwatch, leaving each selection a few seconds longer than the actual length of the corresponding film section.

5. Prepare "A" and "B" music tapes, alternating the music selections on the two rolls. Splice two seconds of white timing leader between selections.

6. At the head of the "A" tape, splice about ten feet of white timing

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leader. (Each section of timing leader is exactly seven and one-half inches long—one second). Five seconds ahead of the first musical note, splice in a cue tone, one half inch in length Any sound will do, for example, a half-inch of 1000 cycle tone, when run at normal speed, will produce a short, sharp "beep"

7. Measure ten seconds ahead of this point (corresponding to the six feet of 16mm film in the workprint leader) and mark this point "sound start".

8 Place the tape "sound start" over the "A" tape playback head. Place the film "sound start" in the gate of the projector. Cue up the second tape playback unit and you are ready to record against the workprint picture.

Trial Runs Helpful

9. By starting the projector and "A" tape playback unit simultaneously, the "beep" tone should sound when the film punch mark flashes on the screen. It may take a few trial starts to accomplish this, but when "beep" and flash occur together, the "A" music should automatically start with the first frame of picture, exactly five seconds later

10. Music "A" will continue to the end of the sequence. When the cue point is reached, fade out "A" music. start the "B" tape playback and fade in "B". A little practice in cross fading will make smooth transitions possible. If the end of "A" music is in the same key as the beginning of "B" music, the transition is almost completely unnoticeable. With the mixer controls, hold the music level well under that of the narration which the narrator will speak into a microphone, preferably in an adjoining, sound-controlled room (Fig. 3).

Continue in this manner, cross-fading from one tape playback to the other. Of course, for film sequences in which no music is wanted. both playbacks will be stopped Background sounds can be used in place of music, or, both playbacks can be operating together, one supplying music while the other produces a background sound effect.

If the music cues are complicated, it may be helpful to have a footage counter installed on the projector. Then you can pre-measure the workprint footage, prepare a cue sheet and bring in the music at the precise point you want it This refinement may require the services of an assistant to read the

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footage counter and call off the footage as it approaches the cue point. An alternative method, if you have no footage counter, is to pre-punch the workprint film a predetermined distance ahead of each music cue. The resulting flash on the screen will signal the next music cue This is particularly effective in the case of end title music, which can then be caused to end exactly with the picture

When the recording is complete, the entire tape, with its sync signal, can be transferred to an optical printing track without going through any additional steps It is important to choose a film laboratory capable of reading the sync signal on the final mixed tape

The procedure for synchronizing the optical track with the picture film original is simplicity itself. The "beep" tone on the optical track (recorded from your tape) will occur at the point where the track leader should be marked with three little "x's" and opposite the original picture leader frame marked with three dots (which conforms with the Association of Cinema Laboratory recommendations for preparing film leaders). This is editorial or "dead" sync When the track is advanced to printer sync it is ready for the printer and will stay "in step" throughout the picture

Both Units Stay In Step

The accompanying photos illustrate the principal equipment required and also some of the procedure Fig 1 illustrates how the playback units (left and right) feed sound through the mixer (center) to a recorder equipped with a Rangertone sync-pulse head. Since the recorder and projector operate on the same electrical circuit, they will stay in step with each other throughout the run of a film and its corresponding tape The playback units pictured are Ampex; however, any good quality quarter-inch tape recorder will serve as well since there is no need for synchronization at the source of sound

Fig 2 is a closeup view of Berlant Concertone tape recorder equipped with Rangertone sync system. Also shown is Bogen mixer which accepts the signals from the tape playback units and the narrator's microphone The two Ampex playback units feed music and sound effects through the mixer to the synchronous recorder at same time that narration is being recorded The narrator watches picture projected on screen and times his narration accordingly

Fig 4 shows how the tape timing leader and the film leader are marked with corresponding start marks that assure accurate synchronization of picture and sound

This method of recording and integrating music, sound effects and narration without using sprocketed magnetic film has been a time and money saver for many industrial film producers. Further, it has encouraged many to use effective musical backgrounds when previously such a luxury was considered impossible. ■

SYNC-SIGNAL SYSTEM

Continued from Page 471

developed did not meet these requirements—so it became necessary to pursue a new approach to the generation of the sync signal. This was done by affixing to the camera drive mechanism a small metal housing containing a light source a photo diode and a paper disc or strip on which is inscribed a black-and-white stroboscope pattern The pattern provides a 120 cycle sync signal as the camera drive shaft turns at the correct speed The light source is a tiny, 5-volt,

"grain of wheat" lamp of the type used by doctors in exploring internal cavities. It provides adequate light for the strobe pattern and the photo-diode, and consumes very little battery power—an important consideration in the field.

The 120 cycle signal thus generated is read out by the photo-diode and is then fed to the recorder over a standard three-conductor microphone cable, where it is amplified and divided to 60 cycles for the desired sync index. At that point the sync signal can be monitored. Its level and frequency are checked by means of standard metering mounted on the control panel of the recorder. One meter indicates sync level, the other, a standard reed-type tachometer, monitors the frequency. The two meters provide a reliable method for the man in the field to determine that voltage and frequency are within acceptable limits. He can be assured that when the frequency meter indicates 60 cycles, the camera is operating at exactly 24 frames per second. If, on the other hand, the frequency meter registered only 50 cycles, it would indicate that the camera was operating at a slow 20 frame speed. The latitude of the frequency meter extends from a high of 64 cycles (indicating speed of 25.6 frames per second) to a low of 46 cycles (indicating camera speed of 18.4 frames per second). This range of fluctuation might normally be encountered in the field.

Speed Variation Negligible

While the optimum speed, of course, is 60 cycles or 24 frames per second, this is a standard seldom achieved precisely except under studio conditions. Tests have indicated that for dialogue recording a speed variation of up to 5% in either direction is very difficult to detect audibly and is therefore acceptable from the quality standpoint. Thus, if the camera is operating at any speed ranging from 25½ to 22½ frames per second, the take may be considered acceptable. By quickly reading the indicators on the recorder control panel the operator is able to determine immediately whether the camera speed conforms to acceptable tolerances and he can advise the director if a retake is necessary.

To double check that the signal has not only been applied to the sync head, but also recorded acceptably on the tape, the operator may play back the

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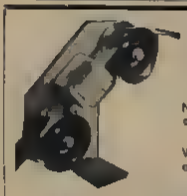

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sync signal and monitor it through the meters or actually listen to it as he would the subject matter itself. Because the speed of the recorder transport is governed to an accuracy of 0.1% the deflection of the frequency meter provides a reliable indication of any speed variations in the camera drive. The sync level meter, by failing to register, would indicate any drop-out of the sound caused by faulty tape or the pile up of dirt on the sync head. This procedure requires only a minute or two for the average scene and can be accomplished in the period between takes

Of primary importance is the fact that the sync impulse derives directly from a strobe pattern affixed to the drive shaft of the camera mechanism, so that the speed at which the sound is reproduced at the studio conforms precisely to the speed at which the film is being drawn through the camera. Thus, even if the camera motor has a clutch that slips there will be no loss of sync. The great advantage of the system is that a positive check can be affected so quickly and easily in the field by the operator The meters on the recorder assure him that he is picking up the signal properly even as he is recording it Were this verification less simple the pressure of events might lead him to neglect or bypass this procedure.

Robert C Maitland, Project Engineer of Magnetic Recorders Company in Hollywood, developed the special Stroboscopic/Photo-diode Sync Generators for the Mitchell 35mm BNC, NC, Standard and 16mm cameras driven by wild or sync motors, the 35mm Arriflex driven by sync or variable speed motors, and the Bell & Howell Eyemo camera (sometimes pressed into service in the forward combat areas). The housings weigh very little and the five different types needed to adapt the various cameras fit neatly into one small kit They can be applied to their respective cameras in a matter of minutes with the aid of a single tool and without drilling any holes in the camera housing. The sync generator locations do not conflict in any way with the space required for camera accessory equipment, such as blimps, teleprompter, matte box, etc.

The highly portable, battery-operated Nagra Model IIIB recorder was selected as primary equipment for the new system. The recorder is supplied with a Rangertone type sync head, and is designed to record a signal that will conform to the Ranger standard so that the tape can be resolved on any Rangertone resolving equipment.

The entire recording system (recorder, sync generator, microphones, power supply, headphones, spare tape, etc.) is of compact size, design and weight and can be set up, operated and maintained by one man. Silence of operation permits the equipment to be operated in close proximity to the microphone on a typical studio set. A small sound powered microphone cartridge is mounted on the control panel assembly to provide for slating and/or talkback to the boom operator. The output from this microphone connects to the record amplifier at a point where sufficient level is developed to identify the recording and permit communication with boom operator.

The "B" voltage required to feed the microphone pre-amplifier is supplied by a 67½ volt battery. All other power required to drive the recorder motor and amplifier circuits is supplied by 12 standard flashlight "D" type 1 5 volt batteries. Provision is also made for an external power supply connector adapting the recorder to commercial power sources.

Magnetic Recorders, in Hollywood, California, manufactured the equipment according to specifications supplied by the Air Force, and delivery of the first five completed units was made recently The equipment is now available commercially to non-military film producers and should prove a boon to all film makers concerned with more efficiently solving location lip-sync sound recording problems. ■

INDUSTRY NEWS

Continued from Page 438

NEW ASC MEMBERS

Four Hollywood directors of photography have recently been elected to membership in the American Society of Cinematographers. They are Ted Voightlander, Meredith Nicholson, Harry Wolf and E Charles Straumer.

Voightlander photographs the "Ben Casey" TV film series at Desilu Gower studios Nicholson's most recent assignment was photographing "Man In The Water" for Key West Films. Harry Wolf is with King Production Service, Hollywood, and has photographed the "Hennessy" and "Don't Call Me Char-

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The splicing tape is registered on precision pins and held in place until autometically applied to the film by swinging the arm over and pressing the chrome button, cutting the adhesive and applying it — in perfect register to the film

Model 35 for 35mm, Model 16 for 16mm—$285

ley" TV film series and a long list of TV commercials. Straumer photographs the "Untouchables" TV films at Desilu's Culver City studio

Clarence Schweiberl, head of the camera department at Warner Brothers Studio, Burbenk, last month was elected to Associate Membership in the ASC.

•

UFPA TO CONVENE IN MIAMI AUGUST 19-24

Some 200 members of the University Film Producers Association are expected to attend the 17th annual national conference to be held at the University of Miami, Aug 19-24 "The

CORRECTION

In the subtitle for the article, "The Photography of 'Hud'," which appeared in our July issue (page 408) it is implied that the picture was photographed in Vistavision We intended to write this 'Panavision', but Gremlins got in their dirty work. As stated several times throughout the article, 'Hud' was photographed in the Panavision process—that is, with Mitchell cameras equipped with Panavision lenses.—EDITOR.

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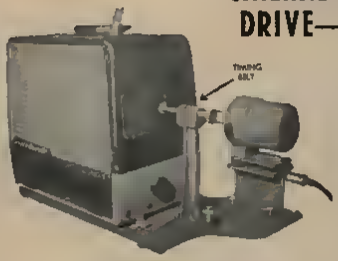

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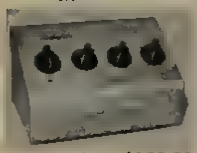

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INDUSTRY NEWS

Continued from Page 493

Elements of Cinema" is theme of this year's conference which annually draws film teachers and producers from throughout the U S. and several foreign lands Classics of educational and non-theatrical films, plus the 1962-63 productions of UFPA members will be shown through the facilities of the UM University College Building

Lt. Col Paul L Maret, USAF Systems Command, will be featured speaker at the Kenneth Edwards Memorial Banquet, Aug. 20. Eugene B. Fleischer of the UM Communications Services Division is in charge of arrangements

•

SPIE MEETS IN LOS ANGELES AUGUST 5-9

The techniques and problems of obtaining data in the hostile environment of space will be the major theme of the 8th Annual Technical Symposium of the Society of Photographic Instrumentation Engineers (SPIE) to be held at the Los Angeles Ambassador Hotel, August 5-9, 1963

More than 2500 engineers, scientists, technicians and technical administrators from the military and industry are expected to attend Many are engaged in the development, manufacture, or use of equipment now being used in the nation's space and missile program

Reflecting the key role of photo instrumentation in these programs, a number of discussion panels will cover such topics as missile launching, early flight tests tracking, in-flight and extra-terrestrial instrumentation and the effects of space on photo-optical instruments

Many other applications of photo-instrumentation will receive attention at special sessions Among these are medicine, cineradiography, biology and a number of manufacturing processes

One special session will be devoted to ultra-high speed photo-instrumentation and its applications in such areas as plasmas, explosives, fluid dynamics, hyperballistics and nuclear particles

Leading figures from the Armed Services and industry will address the Symposium at luncheon and dinner sessions

Again this year, an important part of the program will be the Exhiborama of Equipment, in which the latest developments in photo-optical instrumentation equipment will be displayed and discussed by technical representatives of the manufacturers.

The Society of Photographic Instrumentation Engineers is a non profit professional society founded in 1956 by a group of instrumentation engineers and industrial photographers in Los Angeles, in response to the growing need for the exchange of technical information in the uses of photography and optics in solving engineering problems.

•

ZEISS REVOLUTIONIZES LENS TESTING TECHNIQUES

Automatic electronic instruments developed by Carl Zeiss engineers enable the West German optical firm to test its photographic lenses with high reliability and speed.

Prior to the introduction of the Zeiss electronic equipment, lens testing was an intricate, time-consuming process carried on by highly skilled technicians Accuracy depended largely on the training and judgment of the testing personnel. Two basic methods were used: Either the lens itself was examined under high-precision optical instruments, or an image produced by the lens was examined The first method was time-consuming and required the utmost care. The second procedure required troublesome balancing and comparing of optical images, and often produced fatigue which could lead to erroneous results.

With the fully automatic instruments developed by Zeiss, lenses are tested completely by electronic means, greatly increasing the speed and accuracy of the operation A grating composed of alternate black and white lines is imaged through the lens under examination The image is scanned by a photoelectric receiver placed behind a narrow slit

A high-quality lens produces marked differences in brightness between black and white lines (high contrast transfer). Accordingly, a relatively strong alternating current is generated in the photoelectric receiver as the grating image is scanned In the case of a relatively poor image (low contrast transfer), the alternating current generated is weak, diminishing to zero when the grating image is no longer resolved by the lens Image quality is measured in the center of the image field, and at various other points, for both tangential and radial image elements

The testing instrument automatically focuses the lens under inspection by locating the distance at which the maximum degree of contrast between black and white lines of the grid is achieved. This plane of optimum image quality is automatically indicated by a dial on the instrument panel.

•

TRADE NOTES: — *Eastman Kodak Company* upped prices of its professional color motion picture negative

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same with 3 coated lenses, W A 1" and 3" . . 265

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Kodak K-100 f/1 9 lens, excellent cond . . 125

Solex Supreme f/1 9 lens, good cond . . 150

same with 3 coated lenses, W A 1" and 3" . . 195

Auricon Cine Voice, comp with amplifier & acc , exc . . 795

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Single lens model f/2 8 lens good . . $150

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Model Q, 3 lenses case factory overhauled . . 495

Large stock of Eyemo lenses, parts, & acc Let us what you need, we will quote

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16mm PHOTOGRAPHY, sound MATHEWSON, 10501 Ilona GR 7-9830, Los Angeles

Continued on Next Page

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Classified Ads

Continued from Preceding Page

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INDUSTRY NEWS

Continued from Page 494

approximately 12% July 15. Hike is first for color negative in 13 years. affects negative, internegative and color intermediate films . Ten employees of *Consolidated Film Industries* in Hollywood last month received "25-year Pins" They were· Rosalind Burghardt, John M. Cooper, Ted Fogelman, William Funck, Dane Hansen, Lucille Holt, Job Sanderson, Ben Wolf, Travis Martinelli and Bill Toney . Jack Frost, Detroit lighting equipment renter, moved $100,000 worth of equipment to the Dearborn amphitheater to light the Ford Motor Co pageant, "The Man From Dearborn"

BEHIND THE CAMERAS

Continued from Page 454

JACK SWAIN, "Rawhide"*

NEAL BECKNER, "The Great Adventure"*

TWENTIETH CENTURY - FOX

DANIEL FAPP, ASC, "Move Over, Darling" (C'Scope & Color) with Doris Day and James Garner. Michael Gordon, director.

WILKIE COOPER, "The Winston Affair" (Talbot Pennebaker Prod., C'Scope, shooting in England) with Doris Day and James Garner Michael Gordon, director.

JAMES VAN TREES, ASC, "The Phil Silvers Show"*.

UNITED ARTISTS—TV

BURT MARQUARDT "Law Breaker"*

UNIVERSAL CITY

JOSEPH LA SHELLE, ASC, "Wild and Wonderful" with Tony Curtis and Christine Kaufman Michael Anderson, director.

NICK MUSURACA, ASC, "Jack Benny Show"*

CLIFFORD STINE, ASC, "King of the Mountain" (Eastman color) with Marlon Brando and David Niven Ralph Levy, director

JOHN RUSSELL, ASC, RAY RENNAHAN, ASC, "The Virginian"*.

WALTER STRENGE, ASC, ELLIS THACKERY, ASC, "Channing"*

JOHN WARREN ASC, BENJAMIN KLINE, ASC, RAY RENNAHAN, ASC, RICHARD RAWLINGS, "Arrest and Trial"*

WILLIAM MARGUTTIS, ASC ELLIS THACKERY, ASC, "Wagon Train"*

LIONEL LINDON, ASC, BENJAMIN KLINE, ASC, RICHARD RAWLINGS, 'Chrysler Theatre"*

JOHN WARREN, ASC, Alfred Hichcock Presents' *

WILLIAM MARGULIES, ASC, "Kraft Theatre"*

WALT DISNEY

WILLIAM SNYDER, ASC, "Bristle Face"*

EDWARD COLMAN, ASC, "Mary Poppins" (TColor with Julie Andrew and Dick Van Dyke. Robert Stevenson, director.

WARNER BROS.

ERNEST LASZLO, ASC, "Four for Texas" (Technicolor) with Frank Sinatra and Dean Martin Robert Aldrich, producer director.

BERT GLENNON, " Sunset Strip"*.

DIMENSION 150

Continued from Page 471

For exhibition, Dimension 150 employs screens ranging from 120 degrees to 150 degrees of arc, depending on the physical features of the theatre The screen aspect ratio is 2.71-to-1 and a typical screen is 34 feet high by 92 feet wide According to the developers, conversion is relatively simple for theatres already equipped for showing 70mm films, and the estimated conversion costs range between $15,000 and $25,000 Under development is an "adjustable" screen which will accommodate projection of all film sizes and processes At that time, it is claimed, switching from CinemaScope to Dimension 150 projection would be achieved electronically within a 2 to 3 minute interval.

Todd-AO Corporation, which has acquired the process, claims "Dimension 150 has economic benefits for the entire industry." ■

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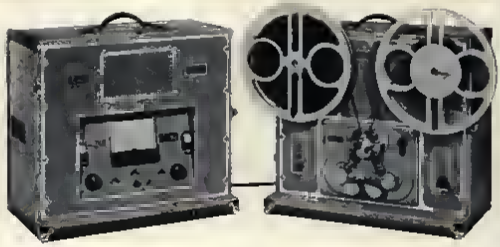

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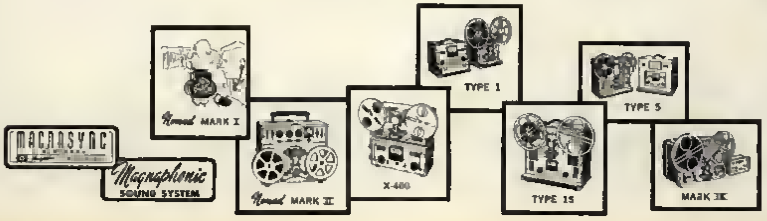

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HIALEAH, FLA
Camera Equipment Co., Inc
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HOLLYWOOD, CALIF
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6510 Santa Monica HO 9-5115
S O S Photo Cine Optics, Inc
6331 Hollywood HO 7 5202
KANSAS CITY MO
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Country Club Plaza, LO 1 7761
Crick's Camera Shop
6320 Brookside Plaza, HI 4-3390
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Century Camera Shops, Inc
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NEW YORK CITY
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Flaiman & Sabb Inc
68 W 45th MU 2 2928
Pictronics Corporation
236 E 46th YU 6 3713
S O S Photo Cine Optics Inc
602 W 52nd PL 7 0440
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Wilson Camera Sales Co
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ST LOUIS MO
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Brooks Cameras, Inc
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Foreman's
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Casilla 500, Calle Potosi 261 263
BRAZIL, Rio de Janeiro
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BURMA, Rangoon
G K Theatre Supply Co., Ltd
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DENMARK, Copenhagen CHL
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12 Moor St., (W 1)
Gordon Cameras Ltd
45 Kensington High, (W-8)
FRANCE, Paris
Stockiss Simplex S A
6, Rue Guillaume Tell
GERMANY Hilden Dusseldorf
Gerhard Johansen
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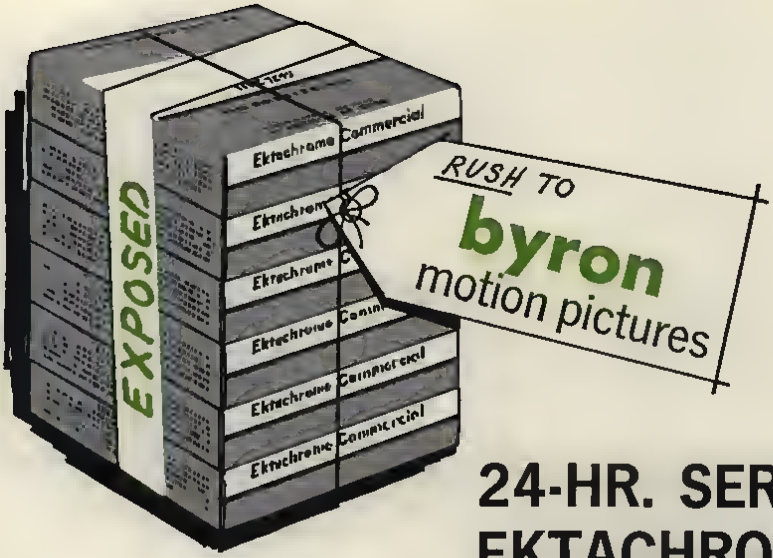

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